

York County, South Carolina Attainment Area Summary

Upon review of the ozone nonattainment area boundary recommendations submitted by the South Carolina Department of Health and Environmental Control (Department) on July 14, 2003, the United States Environmental Protection Agency (EPA), in a letter dated December 3, 2003, notified the Department of its intent to promulgate designations of nonattainment areas in South Carolina with modifications to the State's recommendations. Specifically, EPA responded that York County should be included as a nonattainment area due to its affiliation with the Charlotte-Gastonia-Rock Hill Metropolitan Statistical Area (MSA). The Department wishes to take this opportunity to demonstrate why EPA's proposed modifications are inappropriate.

The Clean Air Act's requirement of MSAs or Consolidated MSAs as the nonattainment boundary applies only to areas designated as serious and above. Based on the latest draft proposal by EPA concerning implementation of the 8-hour ozone standard, the Charlotte-Gastonia-Rock Hill MSA would be classified as moderate. Designating the entire MSA would, by default, include York County and bind it to the extended attainment date, as well as a significantly higher design value regardless of the fact that the York County air quality monitor shows attainment with the standard. The Office of Management and Budget (OMB) has defined metropolitan areas for statistical purposes to include the collection, tabulation, and publication of data by Federal agencies for geographic areas to facilitate the uniform use and comparability of data on a national scale. The OMB does not consider the MSA a reliable tool for nonstatistical purposes. This opinion was recently confirmed in the December 27, 2000, *Federal Register* notice concerning *Standards for Defining Metropolitan and Micropolitan Statistical Areas* by the OMB. The Department asserts that designating areas under the National Ambient Air Quality Standards is indeed a nonstatistical program. For EPA to default to a presumptive boundary for "consistency" purposes stifles the creativity to improve air quality as expeditiously as possible to bring clean air to its citizens and rewards those who choose to wait. EPA's broad-brush approach discourages initiatives by local areas, counties, and states to be proactive. Further, for EPA to default to its presumptive boundaries rather than allowing the use of its published criteria significantly changes Congressional intent and EPA's guidelines to a "presumptive norm."

Throughout this summary of the York County attainment area recommendation, any statistical analysis or evaluation of the York County data will be conducted in comparison to the area that EPA has stated it's intention to declare as a nonattainment area, which includes Cabarrus, Gaston, Lincoln, Mecklenburg, Rowan, and Union Counties in North Carolina; and York County in South Carolina (Charlotte-Gastonia-Concord, NC-SC MSA).

Based on South Carolina's commitment to "Cleaner Air Sooner," a designation of attainment for York County is appropriate. The South Carolina General Assembly passed, and our Governor signed, a concurrent resolution that endorses Early Action Compacts and encourages state agencies to develop programs that focus on efforts that state government can take to reduce ground-level ozone. At the end of 2002, 45 of South Carolina's 46 counties entered into Early Action Compacts to implement ozone reduction strategies earlier than federally required. These counties, along with other government entities, industry, environmental groups, and other stakeholders have worked together both at the local level and state level to develop strategies to reduce ozone pollution. The few counties that have been identified by EPA as potential nonattainment areas are actively participating in the Early Action Compact process and are developing local plans to bring cleaner air sooner to their citizens. Most importantly to our future air quality, the 45 counties continue to embrace strategies that are best for improving air quality on a statewide level and not just where boundary lines are proposed to be drawn. Additionally, the

Department entered into a specific memorandum of understanding with North Carolina's Department of Environment and Natural Resources confirming the agreements reached between the two agencies with regard to ozone attainment matters, an Early Action Compact for counties in South Carolina (including York) and in the locally led Sustainable Environment and Quality of Life (SEQL) effort for the Charlotte, NC area. These efforts demonstrate a commitment by all involved to protect and improve air quality for the public.

Based on South Carolina's statutory authority to require controls on sources regardless of location, a designation of attainment for York County is appropriate. The Department has the legal authority to seek emission reductions from any source regardless of where it is located if it adversely impacts air quality. The Department currently has regulations that are more stringent and protective than federal requirements. Further, our recent actions such as addressing NO_x emissions from stationary sources demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

Based on state and EPA modeling, a designation of attainment for York County is appropriate. Preliminary results show that all areas of South Carolina will attain the 8-hour ozone standard by 2007 with the reductions attributed to the NO_x SIP Call and the Tier 2/Low Sulfur Fuel regulations. Additionally, a modeling analysis for the year 2012 demonstrates attainment as well. The results of this modeling verify the regional modeling completed by EPA, which also demonstrated attainment for all South Carolina areas with implementation of the above programs.

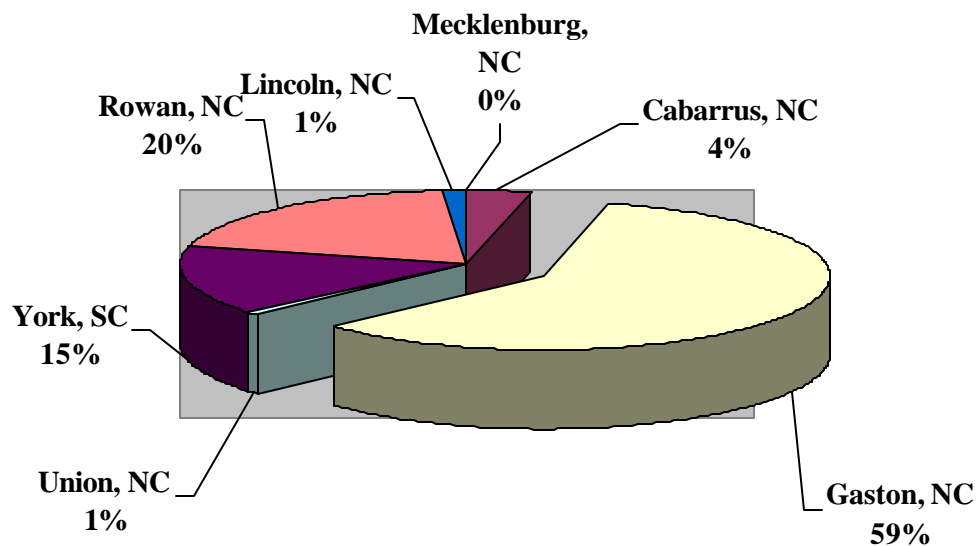
Based on the 2001-2003 quality assured data, a designation of attainment for York County is appropriate. The monitor in York County is attaining the 8-hour standard with a design value (DV) of 0.083 ppm. York County experienced **no** exceedances of the standard value (0.085ppm or higher) in 2003. The monitors in York, as well as the monitors in Union (SC), Cherokee (SC), Chester (SC), and Arrowood (Mecklenburg County, NC), all attain the standard. Furthermore, these surrounding monitors bound York County. By defaulting to the MSA/CMSA presumptive boundary EPA may actually skew the population information when comparing to actual air quality monitoring results. By designating York County as nonattainment, the citizens would be told that their air quality does not meet the standard when the monitoring data confirms that it does.

Based on a comprehensive ozone-forecasting program that covers twenty-nine (29) counties in our state, including York County, a designation of attainment for York County is appropriate. South Carolina citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions they believe appropriate to better protect their health. The Department has expended and will continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

Based on low population and low population density, a designation of attainment for York County is appropriate. In 2000, York County had a population of 164,614, which accounted for only 10.98 percent of the MSA population. York County's population is significantly lower than the adjacent MSA counties of Gaston and Mecklenburg, North Carolina. Gaston County had a population of 190,365 and Mecklenburg County had a population of 695,454. At 241.37 persons per square mile, York County had the fifth lowest population density in the MSA.

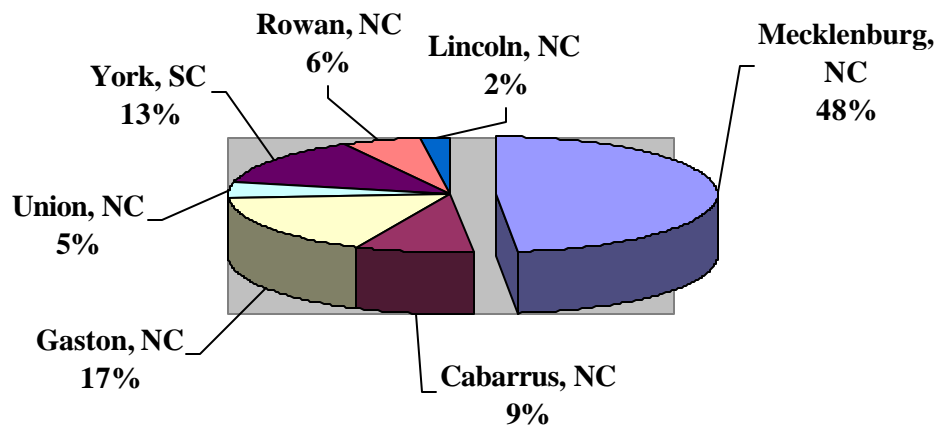
Based on the lower MSA point source emissions, a designation of attainment for York County is appropriate. York County comprises 15 percent of the MSA NO_x point source emissions. (See figure 1.)

**Figure 1: Charlotte-Gastonia-Rock Hill MSA
Point Source NO_x Emissions**

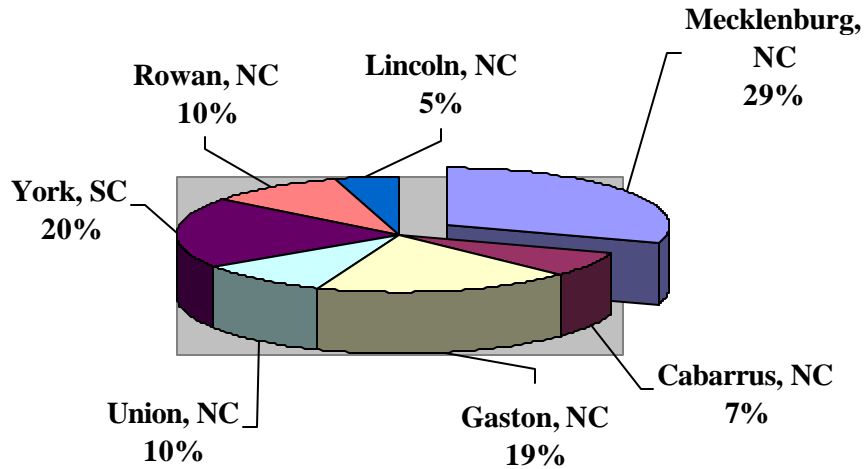


Based on the lower MSA area source emissions, a designation of attainment for York County is appropriate. York County comprised only 13.31 and 19.57 percent of the MSA daily NO_x and VOC area source emissions, respectively. (See figures 2 & 3.)

**Figure 2: Charlotte-Gastonia-Rock Hill MSA
Area Source NO_x Emissions**

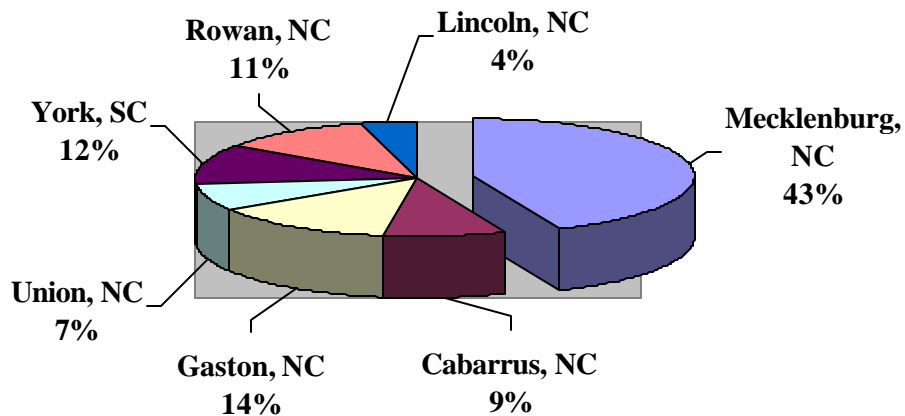


**Figure 3: Charlotte-Gastonia-Rock Hill MSA
Area Source VOC Emissions**

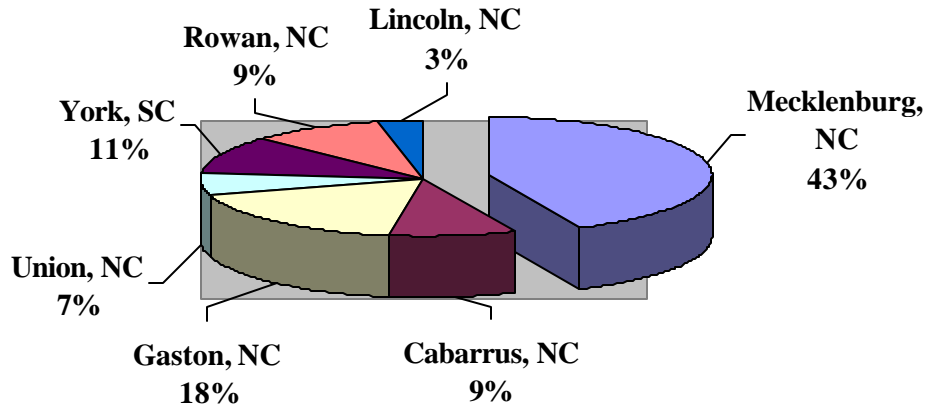


Based on the lower MSA mobile source emissions, a designation of attainment for York County is appropriate. York County contributed only 11.53 percent of the MSA mobile source NO_x emissions and 10.54 percent of the MSA mobile source VOC emissions. (See figures 4 & 5.)

**Figure 4: Charlotte-Gastonia-Rock Hill MSA
Daily On-Road Mobile Source NO_x Emissions**



**Figure 5: Charlotte-Gastonia-Rock Hill MSA
Daily On-Road Mobile Source VOC Emissions**



Based on commuter flow in York County, a designation of attainment for York County is appropriate. According to the U.S. Census Bureau 78.13 percent of workers in the MSA, work in the same county they live in. York County accounts for 10.57 percent of the working population in the MSA, workers living in York and commuting to other counties in the MSA accounts for only 3.86 percent of the entire MSA worker flow.

County Worked In	Table 1: County of Residence for Charlotte-Gastonia-Rock Hill MSA							
	County of Residence							
	Cabarrus (NC)	Gaston (NC)	Lincoln (NC)	Mecklenburg (NC)	Rowan (NC)	Union (NC)	York (SC)	Grand Total
Cabarrus (NC)	4.91%	0.06%	0.03%	0.94%	1.14%	0.08%	0.04%	7.20%
Gaston (NC)	0.06%	7.90%	0.44%	0.55%	0.03%	0.03%	0.35%	9.36%
Lincoln (NC)	0.01%	0.26%	2.14%	0.10%	0.01%	0.00%	0.02%	2.55%
Mecklenburg (NC)	3.18%	3.24%	0.92%	46.19%	0.69%	3.49%	3.35%	61.06%
Rowan (NC)	0.56%	0.15%	0.04%	0.18%	5.71%	0.01%	0.03%	6.69%
Union (NC)	0.07%	0.03%	0.01%	0.68%	0.03%	4.57%	0.06%	5.46%
York (SC)	0.04%	0.22%	0.01%	0.59%	0.02%	0.09%	6.71%	7.69%
Grand Total	8.84%	11.86%	3.60%	49.24%	7.63%	8.26%	10.57%	100.00%
Out of County Flow	3.93%	3.96%	1.46%	3.05%	1.92%	3.69%	3.86%	

1. Legislative and County support for the Department's "Cleaner Air Sooner" concept.
2. The Department's statutory authority to require controls on sources regardless of location.
3. State and EPA modeling indicating attainment with the ozone standard in 2007 and 2012.
4. Quality assured ozone-monitoring data indicating attainment.
5. Comprehensive ozone forecasting program.
6. Low population and low population density.

7. Low MSA point, area, and mobile source emissions.
8. Low MSA commuter flow.

The above eight factors represent the most compelling reasons why the Department believes York County should be designated attainment. Additional data to support these factors, as well as other supporting information to address EPA's eleven criteria, is attached.

**Supporting Documentation for
York County, South Carolina
Attainment Area**

York County, South Carolina Attainment Area

A. Emissions and Air Quality in Adjacent Areas (Including Adjacent MSAs)

To evaluate the emissions in York County and adjacent areas, South Carolina utilized the estimated annual 1999 oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emissions. The types of NO_x and VOC emission sources that were evaluated include point, area, and on-road and off-road mobile sources.

Figures A-1 and A-2 show a comparison of emission levels from each source category for York and surrounding counties. Additional emissions inventory information is provided in Section D.

Figure A-1: NO_x Sources for York and Adjacent Counties*

* Order of bars corresponds with order of counties in legend

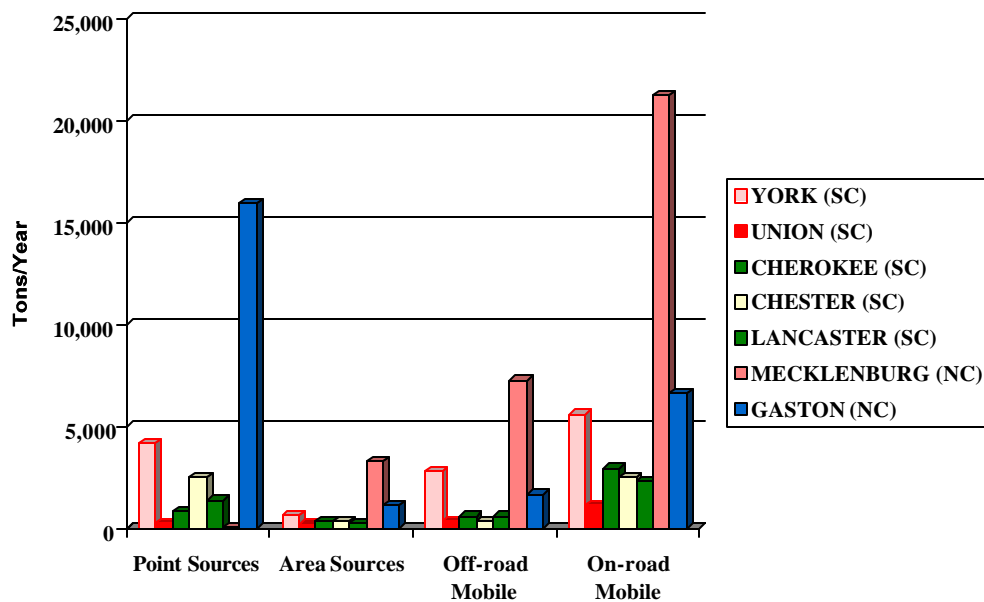
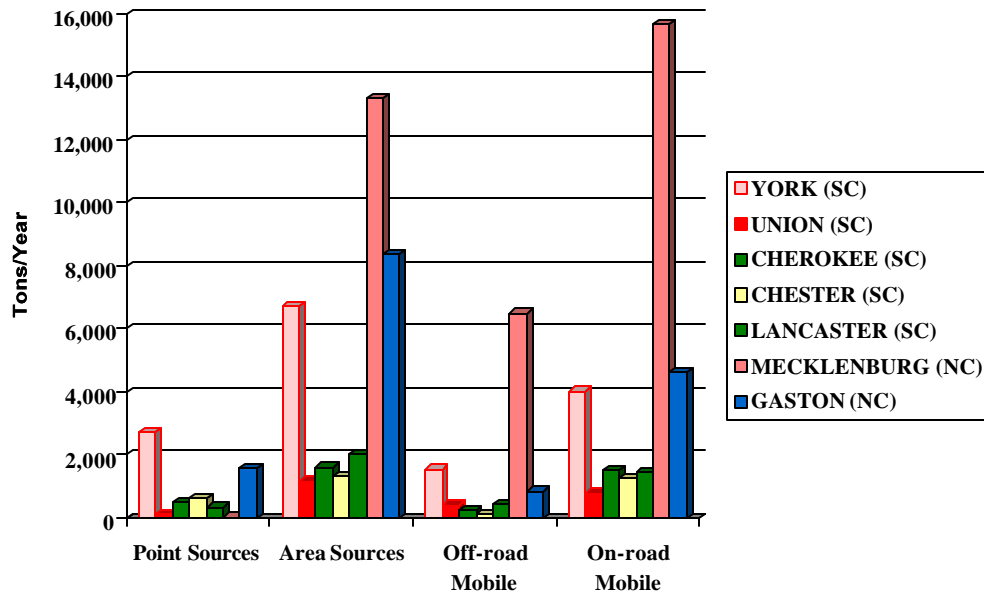


Figure A-2: VOC Sources for York and Adjacent Counties*

* Order of bars corresponds with order of counties in legend



The Department currently has one ozone-monitoring site in York County; the monitor indicates attainment of the air quality standard. York County is part of the Charlotte-Gastonia-Rock Hill MSA. Additional air quality information is provided in Section C.

B. Population Density and Degree of Urbanization Including Commercial Development (Significant Difference from Surrounding Areas)

In 2000, York County had a population of 164,614, which accounted for 10.98% of the total MSA population (1,499,293). The more populated counties of Gaston (NC) and Mecklenburg (NC) accounted for 12.70% and 46.39% of the MSA population, respectively. Even though four counties were less populated than York County, the counties of Cabarrus, Rowan, and Union, North Carolina, still contained a substantial portion of the MSA population: 8.74%, 8.69%, and 8.25%, respectively.

Containing 682 square miles, York County is the largest county in the MSA. In fact, 20.21% of the total MSA land area is in York County. In other words, over one-fifth of the MSA land area is contained in York County, yet only a little more than one-tenth of the MSA population (10.98%) lived in York County in 2000. In contrast, Gaston County contained 10.55% of the land area but 12.70% of the MSA population and Mecklenburg contained 15.59% of the land area but 46.39% of the MSA population.

York County's population density also distinguishes it from the other MSA counties. A population density of 241.37 persons per square mile, York was the third least densely populated county in the MSA. The three most densely populated MSA counties are Cabarrus, Gaston, and Mecklenburg. With population densities of 360.06, 534.73, and 1,322.16, respectively, Cabarrus, Gaston, and Mecklenburg Counties are about 1.5, 2, and 5.5, respectively, times more densely populated than York County.

Table B-1 contains population and population density data for York County and the other six MSA counties.

Table B-1: Population, Land Area, and Urban/Rural Population, 2000								
	Cabarrus (NC)	Gaston (NC)	Lincoln (NC)	Mecklenburg (NC)	Rowan (NC)	Union (NC)	York (SC)	MSA Total
Population ¹	131,063	190,365	63,780	695,454	130,340	123,677	164,614	1,499,293
% MSA Population	8.74%	12.70%	4.25%	46.39%	8.69%	8.25%	10.98%	100%
Land Area (Square Miles) ²	364	356	299	526	511	637	682	3,375
% MSA Land Area	10.79%	10.55%	8.86%	15.59%	15.14%	18.87%	20.21%	100%
Persons per Square Mile ³	360.06	534.73	213.31	1,322.16	255.07	194.16	241.37	444.23
Urban Population	94,890	147,533	24,173	669,027	76,640	62,086	105,847	1,180,196
% Urban Population ⁴	72.40%	77.50%	37.90%	96.20%	58.80%	50.20%	64.30%	
% MSA Urban Population	8.04%	12.50%	2.05%	56.69%	6.49%	5.26%	8.97%	100%
Rural Population	36,173	42,832	39,607	26,427	53,700	61,591	58,767	319,097
% Rural Population ⁵	27.6%	22.5%	62.1%	3.80%	41.2%	49.80%	35.70%	
% MSA Rural Population	11.34%	13.42%	12.41%	8.28%	16.83%	19.30%	18.42%	100%

Figure B-1 below, outlines the York County urban areas for the year 2000. Accordingly, the urban areas covered only 12.7% of the land area in York County. In other words, 105,847 people in York County, or the entire urban population, lived in an 86.6 square mile area (12.7% of 682 square miles).

¹ Data provided by the US Census: 2000.

² Data provided by the US Census: 2000.

³ Data provided by the US Census: 2000.

⁴ Data provided by the South Carolina Statistical Abstracts.

⁵ Data provided by the South Carolina Statistical Abstracts.

Figure B-1

York County 2000 Urban Area

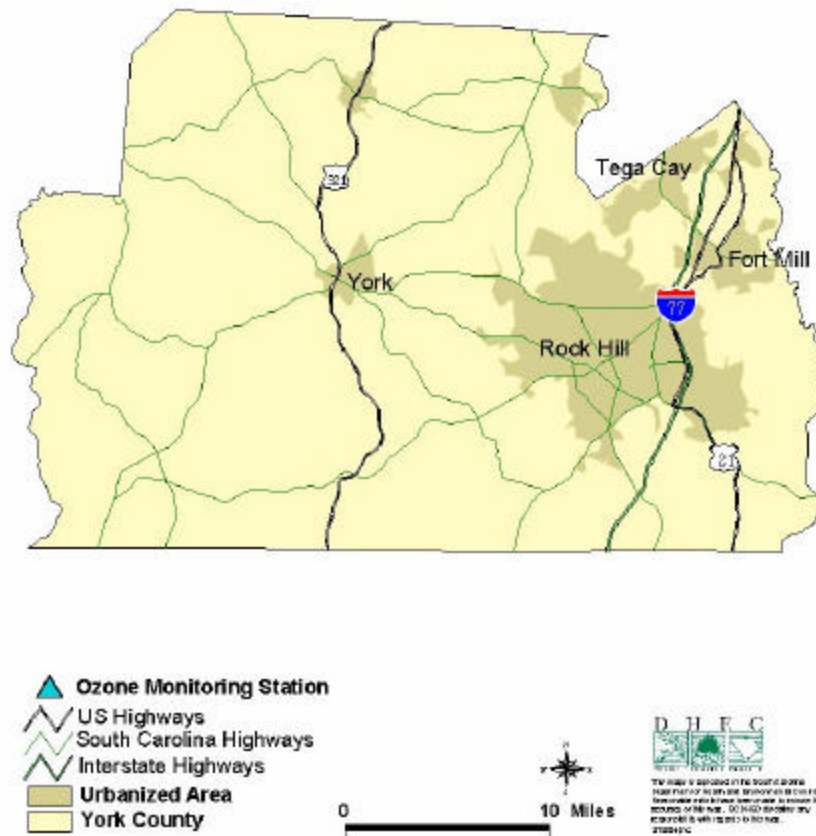
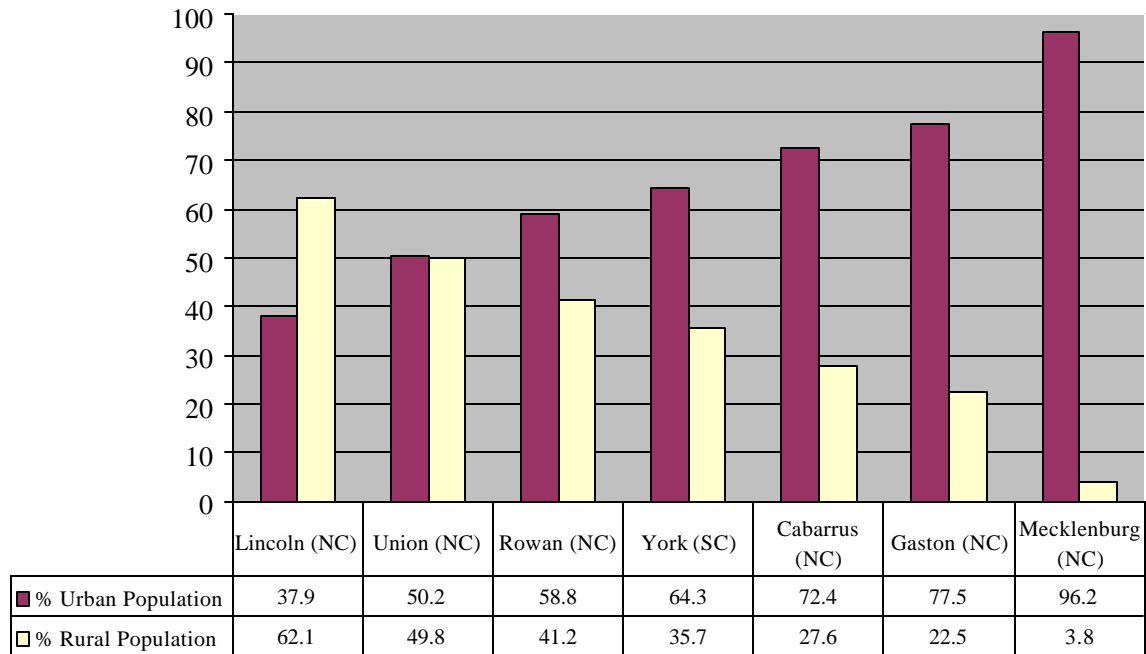


Figure B-2 below, depicts the urban and rural population of each county in the MSA whereas Figure B-3 depicts urban and rural population in each county as a percentage of the MSA urban and rural population. In 2000 York was 64.30% urban and ranked fourth in terms of urban population as seen in Figure B-2. York also contained about 8.97% of the MSA urban population. However, based on Figure B-3, York contained the second highest rural population relative to the MSA rural population. In summary, the population of York County - the largest county in the MSA - was somewhat more urban than rural (64.30% to 35.70%), yet that urban population accounted for only 8.97% of the MSA's total urban population. Furthermore, York contained more of the MSA's total rural population than the other counties, excluding the county of Union, North Carolina. Consequently, a portion of York County has an urbanized center, the remainder of the county is rural in nature, and significant disparities in population distribution exist across York County, and to some degree the other MSA counties.

**Figure B-2:
Percent Urban and Rural, 2000**



**Figure B-3 : Percent Rural and Urban Population
relative to the MSA, 2000**

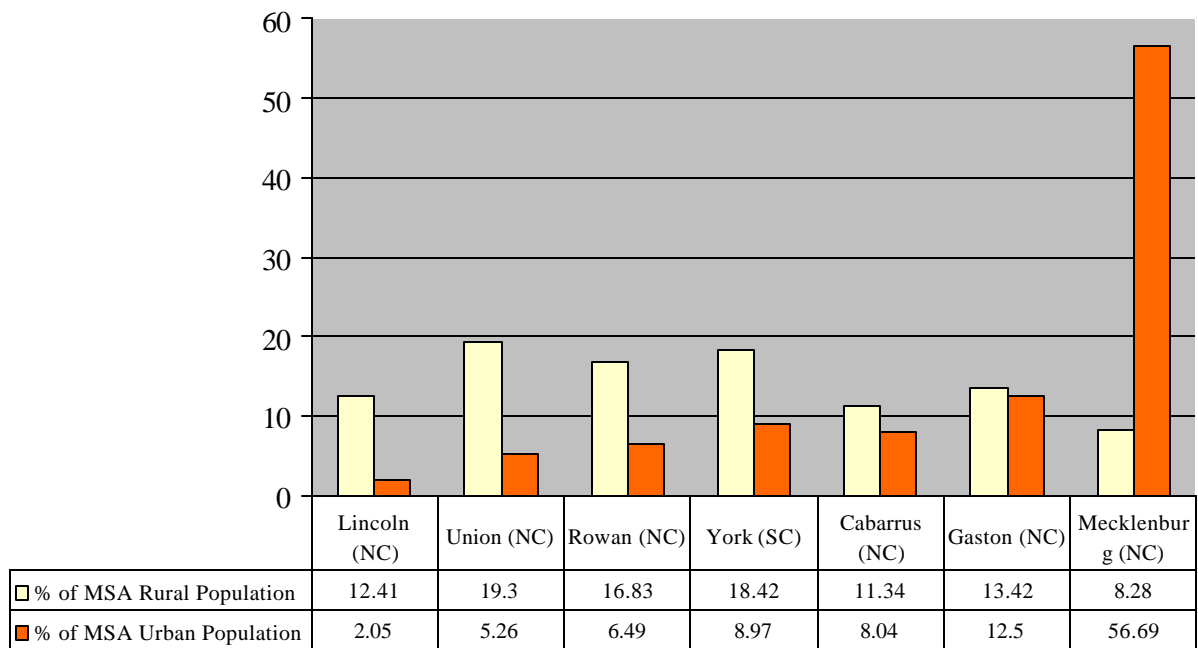


Table B-2 contains the number of employees per county, based on data taken from the Census 2000 and using the North American Industry Classification System (NAICS) for year 2001. In 2001 the number of employees working in the seven MSA counties totaled 803,742. Only 7%, or 52,745, of the total employees in the MSA worked in York County. Furthermore, adjacent Mecklenburg County contained roughly 10 times more employees (534,526) than York County.

Table B-2: MSA Employees, NAICS, 2001		
Area	Total Employees	% Total workers
Mecklenburg (NC)	534,526	67%
Gaston (NC)	62,657	8%
York (SC)	52,745	7%
Cabarrus (NC)	51,523	6%
Rowan (NC)	43,025	5%
Union (NC)	39,581	5%
Lincoln (NC)	19,685	2%
Total MSA	803,742	100%

Table B-3 contains the number of MSA employees per classification for 2001, based on the NAICS Industry Code Description. For example, the Accommodation & Food Services classification in 2001 accounted for 7.25% of the employees in the MSA, and 62.84% of those employees worked in Mecklenburg County while 9.07% of those employees worked in York County. The largest three employment classifications in the MSA were in manufacturing (14.32%), retail trade (10.70%), and Finance and Insurance (10.17%); of those classifications York County employed only 10.86%, 8.92%, and 1.85%, respectively. In fact, Mecklenburg County employed the vast majority of employees in the Finance and Insurance classification. Moreover, York County employed less than 10.0% of the employees in each industry code description, excluding Manufacturing (10.86% of the employees).

Table B-3: MSA Employees per Classification, NAICS, 2001								
Industry Code Description	% in MSA	Cabarrus (NC)	Gaston (NC)	Lincoln (NC)	Mecklenburg (NC)	Rowan (NC)	Union (NC)	York (SC)
Accommodation & food services	7.25	7.55%	8.95%	2.01%	62.84%	5.39%	4.19%	9.07%
Admin, support, waste mgt, remediation services	8.15	2.49%	4.68%	1.24%	77.98%	5.96%	2.54%	5.11%
Arts, entertainment & recreation	1.43	11.40%	4.23%	1.30%	68.33%	4.80%	1.81%	8.12%
Construction	7.03	6.74%	6.31%	2.48%	62.23%	3.88%	12.53%	5.83%
Educational services	1.42	4.21%	8.06%	0.61%	71.16%	8.00%	6.38%	1.58%
Finance & insurance	10.17	1.25%	2.08%	0.37%	92.58%	1.04%	0.83%	1.85%

**Table B-3:
MSA Employees per Classification, NAICS, 2001**

Industry Code Description	% in MSA	Cabarrus (NC)	Gaston (NC)	Lincoln (NC)	Mecklenburg (NC)	Rowan (NC)	Union (NC)	York (SC)
Forestry, fishing, hunting, and agriculture support	0.03	19.64%	*	8.93%	10.27%	*	61.16%	*
Health care and social assistance	8.92	8.68%	10.26%	2.38%	58.11%	8.73%	3.92%	7.91%
Information	3.48	3.98%	2.36%	0.52%	86.78%	1.13%	0.99%	4.25%
Management of companies & enterprises	2.60	4.39%	4.76%	0.26%	71.37%	10.90%	*	8.32%
Manufacturing	14.32	10.17%	17.81%	6.33%	33.78%	10.18%	10.87%	10.86%
Mining	0.02	*	*	*	100.00%	*	*	*
Other services (except public administration)	4.67	6.73%	10.52%	2.09%	63.10%	5.25%	4.21%	8.09%
Professional, scientific & technical services	5.57	3.58%	3.28%	2.42%	82.58%	1.73%	2.20%	4.21%
Real estate & rental & leasing	1.70	6.68%	5.15%	2.13%	77.45%	1.95%	2.18%	4.45%
Retail trade	10.70	10.26%	10.80%	2.81%	55.79%	5.53%	5.89%	8.92%
Transportation & warehousing	4.67	7.25%	1.85%	1.60%	83.57%	2.62%	1.81%	1.30%
Unclassified establishments	0.05	3.71%	8.82%	2.55%	65.20%	3.48%	16.24%	*
Utilities	0.78	1.54%	*	2.00%	90.37%	3.89%	2.21%	*
Wholesale trade	7.04	3.83%	3.60%	2.22%	77.07%	3.32%	3.93%	6.01%
* The number of employees not available or the number of employees was reported as a range.								

C. Monitoring Data Representing Ozone Concentrations in Local Areas and Larger Areas (urban or regional scale)

York is surrounded by attaining monitors in Chester, Union, and Cherokee Counties in South Carolina and by the Arrowood monitor in North Carolina. With the exception of 2002, York County experienced **no** exceedances of the eight-hour ozone standard value of 0.085 ppm. Wind analyses (see figure C-1) on high ozone days in **York County** indicate that the winds are more likely to be from the **northeast** from 1:00am to 6:00pm. In contrast, wind analyses (see figure C-2) on high ozone days in Mecklenburg County indicate the winds are out of the northwest in the morning hours, and the winds are out of the southeast, southwest, and northeast during the afternoon hours. For all wind analyses of high ozone days, the percentage of calm or variable winds range from 40-50 percent meaning that the majority of the time there is very little transport of pollutants across counties.

The York County ozone monitoring station (York CMS 45-091-0006) is located off US Highway 321.

The site has been in operation since 1993. Ozone concentrations are measured from mid-March through mid-November. The area surrounding the monitoring site is agricultural and it is located approximately 222 meters above sea level. According to the South Carolina Department of Transportation (SCDOT) traffic count for 1993, one thousand (1,000) vehicles per day accessed the road next to the monitor. The monitoring objective for the York County site is to measure extreme downwind ozone concentrations relative to the Charlotte Area, particularly when the predominate winds are out of the northeast.

The Cherokee County ozone monitoring station (Cowpens National Battle Ground 045-021-0002) is located off Highway 11. The site has been in operation since 1988 and measurement of ozone concentrations has run continuously since April of that year. The area surrounding the monitoring site is forest and it is located approximately 296 meters above sea level. According to SCDOT traffic count for 1993, one thousand (1,000) vehicles per day accessed the road. The monitoring objective for Cowpens National Battle Ground is to measure concentrations for upwind background.

The Chester County ozone monitoring station (Chester 045-023-0002) is located off Highway 909. The site has been in operation since 1980 and measurement of ozone concentrations are measured from mid-March through mid-November. The area surrounding the monitoring site is rural and it is located approximately 201 meters above sea level. According to SCDOT traffic count for 1992, one thousand (1,000) vehicles per day accessed the road. The monitoring objective for Chester is to measure concentrations for general background.

The Union County (SC) ozone monitoring station (Delta 45-087-0001) is located off Highway 121. The site has been in operation since 1983 but the ozone monitoring station only runs mid-March through mid-November. The area surrounding the monitoring site is rural, and is located approximately 113 meters above sea level. According to SCDOT traffic count for the year 1993, twenty-five (25) vehicles per day accessed the road. The monitoring objective for the Delta site is to measure ozone concentrations for general background.

The Mecklenburg County ozone monitoring station (Arrowood 037-119-1005), operated by the North Carolina Department of Environment and Natural Resources (NCDENR), is located off of I-77. The site has been in operation since 1977 and measurement of ozone concentrations are measured from April 1 through October 31 of each year. The area surrounding the monitoring site is industrial and is located approximately 195 meters above sea level. This data was obtained from the NCDENR website, and the monitoring objective was not identified.

The Union County (NC) ozone monitoring station (Monroe 037-179-0003), operated by the NCDENR, is located in the town of Monroe. The site has been in operation since 1999 and measurement of ozone concentrations are measured from April 1 through October 31 of each year. The area surrounding the monitoring site is suburban and is located approximately 200 meters above sea level. The monitoring objective for the Monroe monitoring site is population exposure. This data was obtained from the NCDENR website.

Table C-1 presents the 2001 through 2003 quality assured 8-hour ozone monitoring data for Chester, Cherokee, Union and York Counties in South Carolina and ozone monitoring data for Mecklenburg, and Union Counties in North Carolina. The design value is the annual fourth-highest daily maximum 8-hour ozone concentration, expressed in parts per million (ppm), averaged over three consecutive years. The 2003 design values for the York CMS, Chester, Delta, Cowpens National Battle Ground, and Arrowood monitors indicate attainment with the 8-hour ozone standard.

**Table C-1:
York Area Ozone Monitoring Data**

County	Site ID	Site Name	4 th Maximum 8-Hour			Design Value
			2001	2002	2003	
York (SC)	45-091-0006	York CMS	0.080	0.096	0.075	0.083
Chester (SC)	45-023-0002	Chester	0.083	0.093	0.078	0.084
Cherokee (SC)	45-023-0002	Cowpens National Battle Ground	0.080	0.093	0.079	0.084
Union (SC)	45-087-0001	Delta	0.079	0.085	0.078	0.080
Mecklenburg (NC)	37-119-1005	Arrowood	0.086	0.094	0.073	0.084
Union (NC)	37-179-0003	Monroe	0.081	0.100	0.083	0.088

Table C-2 contains the previous three years daily maximum ozone concentrations above 0.084 ppm. A period in the box indicates no exceedance occurred on that date.

**Table C-2:
York County Attainment Area Ozone Values**

Date of Exceedance	York (SC) Exceeding Value	Chester (SC) Exceeding Value	Cherokee (SC) Exceeding Value	Union (SC) Exceeding Value	Arrowood (NC) Exceeding Value	Monroe (NC) Exceeding Value
05/05/01	0.086	.
05/11/01
05/15/01
05/18/01
05/19/01
06/18/01
06/19/01	0.086	.
06/20/01	0.086	.
06/21/01
07/10/01
07/11/01	0.096
07/12/01
07/16/01	0.103	.
07/17/01
07/18/01	0.085
08/03/01
08/08/01	0.099	.
08/09/01
08/10/01
08/14/01	.	0.091	.	.	.	.
08/23/01	.	.	0.096	.	.	0.085

**Table C-2:
York County Attainment Area Ozone Values**

Date of Exceedance	York (SC) Exceeding Value	Chester (SC) Exceeding Value	Cherokee (SC) Exceeding Value	Union (SC) Exceeding Value	Arrowood (NC) Exceeding Value	Monroe (NC) Exceeding Value
08/25/01	.	0.085	.	.	.	.
08/27/01	.	.	.	.	.	.
08/29/01	.	.	.	.	.	.
09/13/01	.	.	.	.	.	.
2001 Total Hits	0	2	1	0	5	3
05/24/02	.	.	0.085	0.088	.	.
05/25/02	0.087	.	.	.	0.090	0.090
06/03/02	0.085	.	0.085	.	.	0.085
06/04/02	.	.	.	.	.	.
06/05/02	.	.	.	.	.	.
06/10/02	0.096	0.091	0.086	.	0.089	0.090
06/11/02	.	.	0.099	.	0.085	0.086
06/12/02	0.092	0.086	.	.	.	0.088
06/13/02	0.089	0.090	0.089	0.096	.	0.091
06/29/02	.	0.085	.	.	.	.
07/01/02	.	.	.	.	.	.
07/02/02	.	0.089	.	.	0.102	0.086
07/03/02	.	0.088	.	.	0.086	.
07/04/02	.	.	.	.	.	.
07/05/02	.	.	.	.	0.097	0.100
07/06/02	.	0.085	0.089	.	.	.
07/08/02	0.089	0.093	.	.	0.088	0.091
07/09/02	.	.	.	.	.	.
07/16/02	.	.	.	.	.	0.100
07/17/02	0.101	0.102	.	.	0.104	0.116
07/18/02	.	0.085	.	.	.	0.092
07/29/02	.	.	.	.	.	.
07/31/02	0.088	0.090	.	.	.	.
08/01/02	0.086	.	0.086	.	.	.
08/02/02	0.098	0.090	.	.	0.085	.
08/05/02	0.095	0.096	.	.	.	.
08/06/02	.	.	.	.	.	0.085
08/09/02	0.086	0.087	0.093	.	0.094	.
08/10/02	0.085	.	0.085	.	0.093	.
08/11/02	.	.	0.086	.	0.089	0.089
08/12/02	.	.	0.093	.	.	0.088
08/13/02	.	.	.	.	.	.
08/21/02	0.098	0.098	.	0.085	.	.
08/22/02	.	.	.	.	.	.
08/23/02	0.087	0.085	.	0.086	.	0.109
09/04/02	.	.	.	.	.	.

Table C-2: York County Attainment Area Ozone Values						
Date of Exceedance	York (SC) Exceeding Value	Chester (SC) Exceeding Value	Cherokee (SC) Exceeding Value	Union (SC) Exceeding Value	Arrowood (NC) Exceeding Value	Monroe (NC) Exceeding Value
09/05/02	.	.	0.106	.	.	.
09/06/02	.	.	0.097	.	.	.
09/11/02	0.087
2002 Total Hits	15	16	13	4	12	17
06/10/03
06/24/03	0.099	.
06/25/03	0.106
06/26/03	.	.	0.087	.	.	.
06/27/03
07/17/03
08/26/03
08/27/03
09/20/03
2003 Total Hits	0	0	1	0	1	1

Figures C-1 and C-2 present the wind roses generated from meteorological data at the York and Mecklenburg County airports on days with peak 8-hour ozone readings greater than 0.084ppm. On high ozone days in York County, the winds tend to be from the northeast with 43% of the observations having calm or variable winds. On high ozone days in Mecklenburg County, NC, the winds tend to be from the northwest in the early morning hours, and then switch over to a north, northeast, or southwest direction. Approximately 51% of the observations in Mecklenburg County had calm or variable winds.

The high number of calm or variable winds lends evidence to the fact there is very little transport of pollutants across Mecklenburg. The majority of the time the winds were light and in essence, the counties are being affected by emissions within the county lines.

Figure C-1:

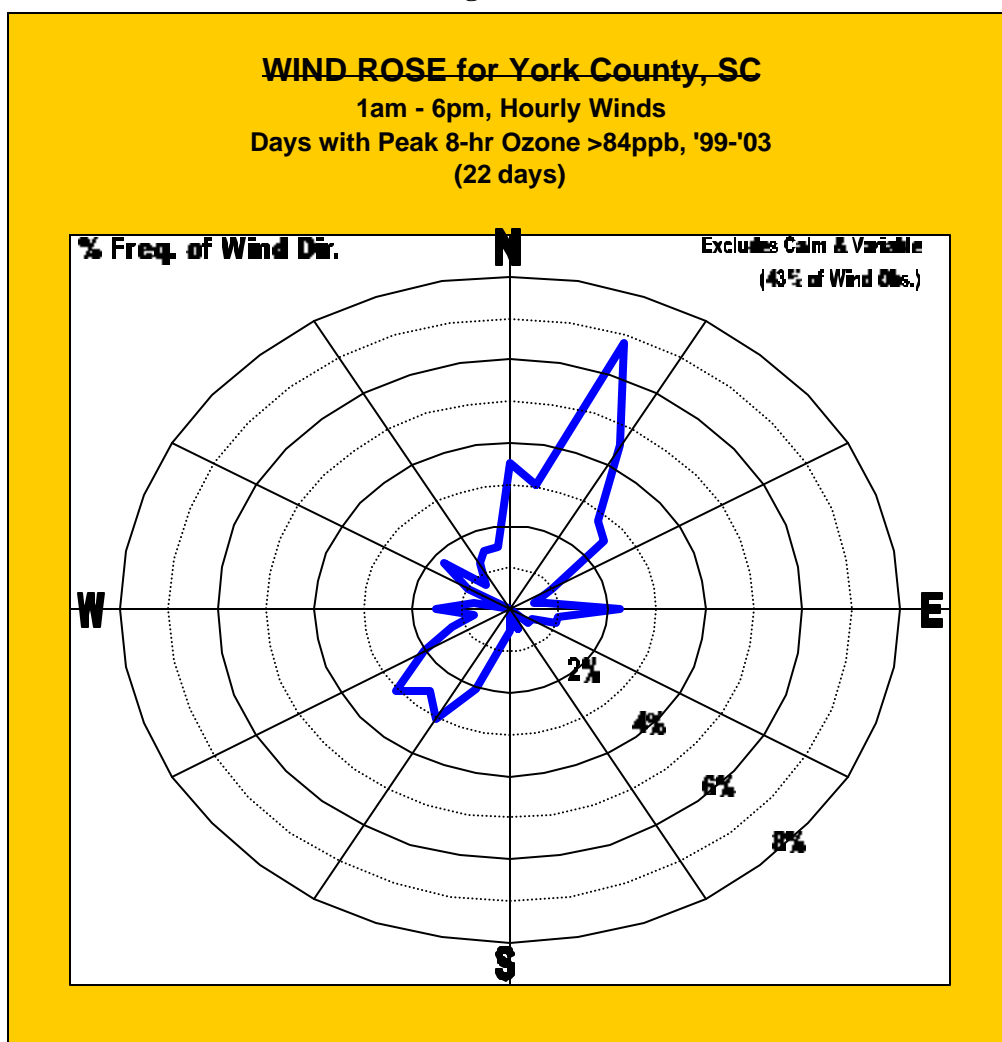
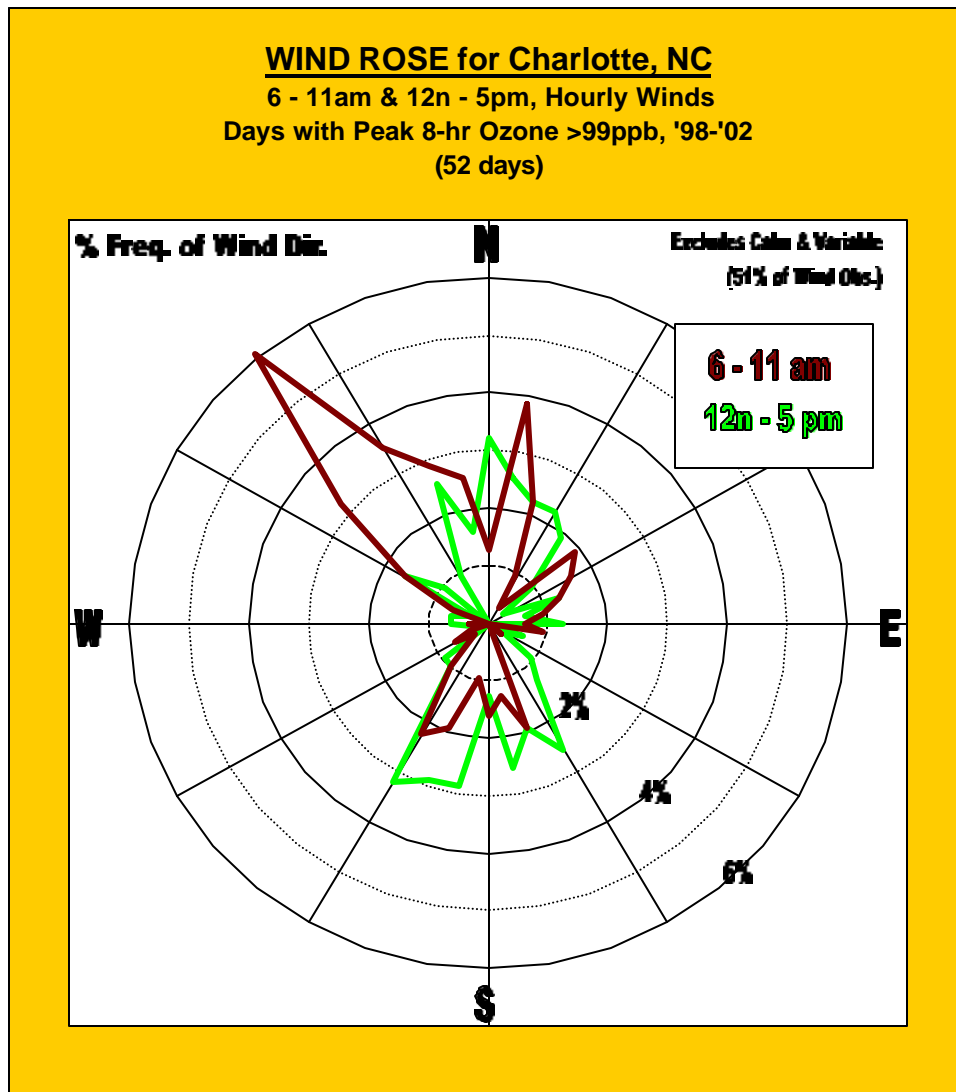


Figure C-2:



D. Location of Emission Sources

Table D-1 lists the NO_x point sources that are in operation in York County based on the 1999 NO_x point sources emissions inventory, which is routinely submitted to the National Emissions Inventory database. York County has 24 NO_x point sources in operation.

Table D-1: York County Point Source NO2 Emissions				
County	Plant Name	Permit Number	Pollutant	Point Source-NO2 (Tons/Year)
York	Celanese Acetate Rock Hill	2440-0010	NO2	2,493.49
York	Bowater Inc Paper/Pulp	2440-0005	NO2	1,423.29
York	Champion Laboratories	2440-0096	NO2	40.11
York	Duke Energy:Catawba	2440-0070	NO2	26.01
York	GP: Catawba	2440-0026	NO2	15.83
York	Inchem Corp	2440-0062	NO2	11.18
York	Springs Industries:White	2440-0009	NO2	7.90
York	Winthrop:University	2440-0084	NO2	4.79
York	Nation Ford Chemical	2440-0039	NO2	4.39
York	Cytec Carbon Fibers LLC: Rock Hill	2440-0097	NO2	4.23
York	Rea Construction:Plant 67	9900-0033	NO2	4.02
York	Pharr Yarns Clover	2440-0002	NO2	3.60
York	Leiner Health Products	2440-0122	NO2	3.54
York	Clariant LSM (America): Rock Hill	2440-0044	NO2	2.50
York	Boggs Materials	9900-0338	NO2	2.29
York	North Safety Products	2440-0027	NO2	1.88
York	Adplex Rhodes	2440-0095	NO2	1.60
York	Arvin Meritor	2440-0059	NO2	1.23
York	Piedmont Medical Center	2440-0054	NO2	0.65
York	Performance Friction Corp	2440-0078	NO2	0.51
York	Trico	2440-0080	NO2	0.04
York	Baldor Electric Co	2440-0088	NO2	0.02
York	Metromont:Rock Hill	2440-0047	NO2	0.01
York	Paxar Corporation	2440-0103	NO2	0.01
	1999 York Co Total			4,053.12

Table D-2 lists the VOC point sources that are in operation in York County based on the 1999 VOC emissions inventory, which is routinely submitted to the National Emissions Inventory database. York County has 24 VOC point sources in operation.

Table D-2: York County Point Source VOC Emissions				
County	Plant Name	Permit Number	Pollutant	Point Source-VOC (Tons/Year)
York	Celanese Acetate Rock Hill	2440-0010	VOC	1,686.16
York	Bowater Inc Paper/Pulp	2440-0005	VOC	505.54
York	GP:Catawba	2440-0026	VOC	320.08
York	North Safety Products	2440-0027	VOC	96.80

Table D-2: York County Point Source VOC Emissions				
County	Plant Name	Permit Number	Pollutant	Point Source-VOC (Tons/Year)
York	Nation Ford Chemical	2440-0039	VOC	32.14
York	Trico	2440-0080	VOC	31.43
York	Clariant LSM (America): Rock Hill	2440-0044	VOC	24.89
York	Adplex Rhodes	2440-0095	VOC	18.58
York	Arvin Meritor	2440-0059	VOC	15.70
York	Duke Energy:Catawba	2440-0070	VOC	15.61
York	Champion Laboratories	2440-0096	VOC	15.44
York	Baldor Electric Co	2440-0088	VOC	12.58
York	Inchem Corp	2440-0062	VOC	11.97
York	Cytec Carbon Fibers LLC:Rock Hill	2440-0097	VOC	9.08
York	Pharr Yarns Clover	2440-0002	VOC	7.66
York	Piedmont Medical Center	2440-0054	VOC	2.64
York	Paxar Corporation	2440-0103	VOC	2.30
York	Boggs Materials	9900-0338	VOC	2.05
York	Performance Friction Corp	2440-0078	VOC	0.79
York	Springs Industries:White	2440-0009	VOC	0.43
York	Leiner Health Products	2440-0122	VOC	0.19
York	Winthrop:University	2440-0084	VOC	0.10
York	Rea Construction:Plant 67	9900-0033	VOC	0.08
	1999 York Co Total			2,812.24

Table D-3 lists the NO_x on-road emissions for York County and Table D-4 lists the VOC on-road emissions for York County.

Table D-3: York County On-road NO _x Emissions			
County	Tier 1	Tier 2	Highway NO _x (Tons Per Year)
York	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	1,903.00
York	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,061.00
York	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	283.00
York	11-Highway Vehicles	04-Diesels	2,338.00
	1999 York Co Total		5,585.00

Table D-4: York County On-road VOC Emissions			
County	Tier 1	Tier 2	Highway VOC (Tons Per Year)
York	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	2,262.00
York	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,288.00
York	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	304.00
York	11-Highway Vehicles	04-Diesels	165.00
	1999 York Co Total		4,019.00

E. Traffic and Commuting Patterns

Estimates of the Daily Vehicle Miles Traveled (DVMT) were obtained from the South Carolina Department of Transportation (SCDOT). SCDOT determines current DVMT by multiplying traffic volume (through traffic counts) and lane miles (determined by the Highway Performance Monitoring System) for each particular area. The South Carolina Department of Public Safety, Division of Motor Vehicles, provided motor vehicle registration data. All other data in this section was obtained from the US Census Bureau. All data is based on the year 2000.

Table E-1 shows the 2000 and 2025 DVMT for York County

Table E-1: DVMT for York County.⁶			
County	2000 DVMT	2025 DVMT	DVMT Change (2000-2025)
York	4,508,132	8,921,044	4,412,912

Figure E-1 below shows that there are three major routes of travel through York County. They include one interstate (I-77), and three US Highways (US 521, US 21 and US 321). There are also numerous state roads and secondary state roads in the county that connect the larger towns together. The traffic counts indicate that heaviest traffic in the area occurs on the north side of I-485 in Mecklenburg County. The traffic counts out of South Carolina drop just after the I-77/I-485 interchange, with the majority of the traffic appearing to head away from the Arrowood monitor into Mecklenburg County. This change of traffic counts at the junction of I-77/I-485 suggests that some York County commuters may not be working exclusively in urban center of Mecklenburg County.

⁶ Data provided from SCDOT

Figure E-1:

Mecklenburg/York County Traffic Counts

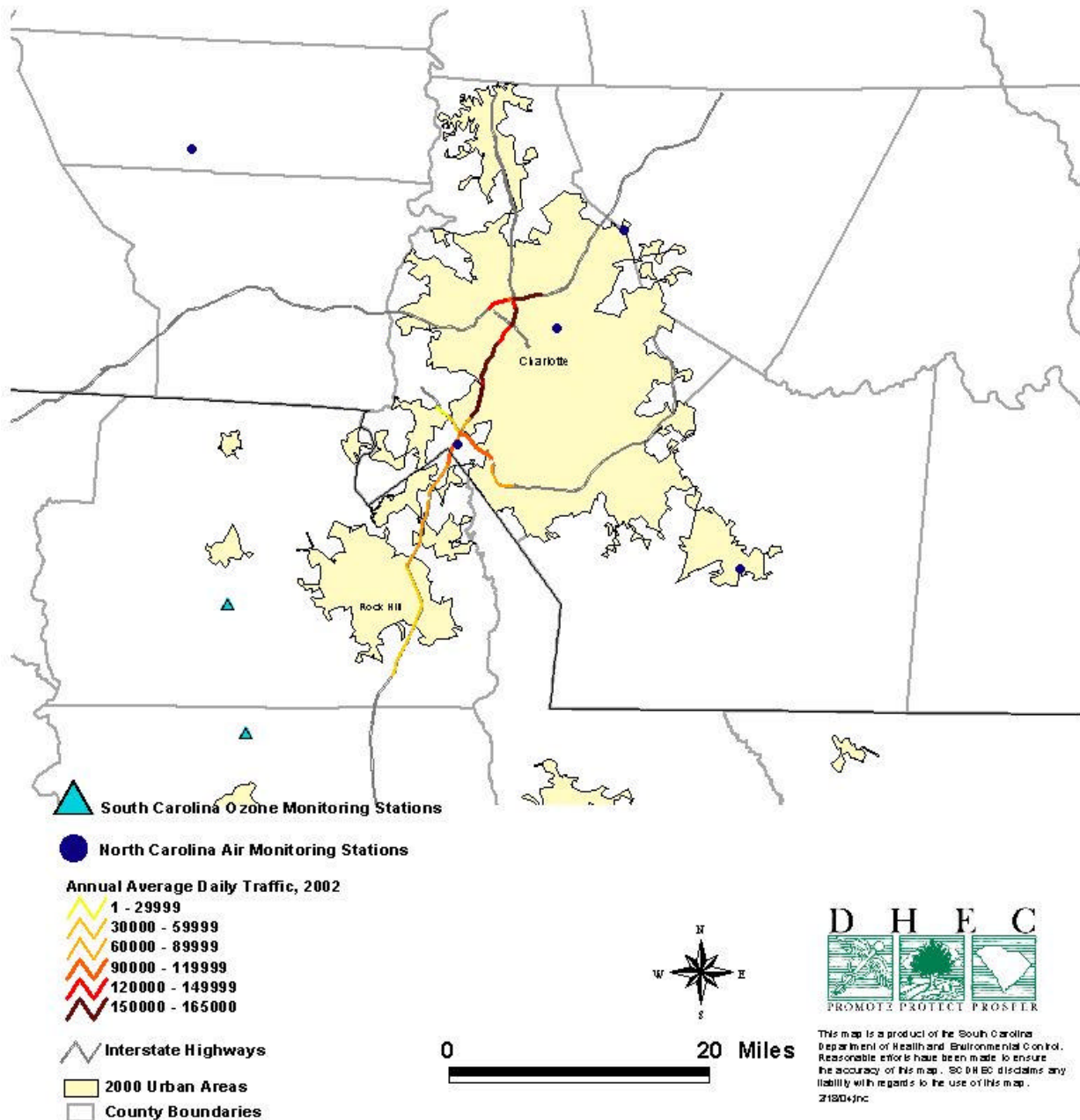


Table E-2 presents the DVMT breakdown by road classification for York County from 2000 and projected out to 2025. Similar information for North Carolina was not available. York County's DVMT consists of 57.27% rural travel and 42.73% urban travel in 2000 and is projected to be 57.18% rural and 42.82% rural in 2025.

Table E-2: DVMT Data for York Area				
	2000	Projected 2007	Projected 2012	Projected 2025
York County				
Rural Interstate (01)	649,338	818,560	939,433	1,253,702
Rural Principal Arterial (02)	206,981	256,632	282,299	412,058
Rural Minor Arterial (03)	890,725	1,104,393	1,214,847	1,773,254
Rural Major Collector (04)	498,002	617,464	679,218	991,422
Rural Minor Collector (05)	86,646	107,431	118,176	172,495
Rural Local (09)	250,317	310,364	341,405	498,332
Rural Total	2,582,009	3,214,844	3,575,377	5,101,263
Urban Interstate (11)	541,238	687,262	791,565	1,062,753
Urban Freeway/Expressway (12)	30,528	37,851	41,637	60,775
Urban Principal Arterial (13)	691,455	857,322	943,066	1,376,549
Urban Minor Arterial (14)	356,183	441,624	485,793	709,088
Urban Collector (15)	234,147	290,315	319,350	466,140
Urban Local (18)	72,572	89,981	98,980	144,476
Urban Total	1,926,123	2,404,355	2,680,391	3,819,781
Grand Total DVMT	4,508,132	5,619,199	6,255,768	8,921,044

Table E-3 presents the DVMT for 1995 and 2005 for the counties in the North Carolina portion of the Charlotte-Gastonia-Rock Hill MSA. Mecklenburg County made up 48.34% of this DVMT in 1995 and is projected to make up 49.78% of this DVMT in 2005.

Table E-3: DVMT for NC Counties in the Charlotte-Gastonia-Rock Hill MSA		
County	1995	2005
Cabarrus	2,880,000	4,065,000
Gaston	4,298,000	5,324,000
Lincoln	1,242,000	1,793,000
Mecklenburg	13,103,000	17,822,000
Rowan	2,995,000	3,964,000
Union	2,587,000	3,836,000

Tables E-4 and E-5 present the commuter flow across the entire Charlotte-Gastonia-Rock Hill MSA. It shows that 78.13% of the workers that live in the MSA remain in their home county to work. York County commuter flow into the North Carolina portion of the MSA makes up 3.86% of the total

commuter flow in the MSA. Table E-5 shows the county-to-county worker flow for the Charlotte-Gastonia-Rock Hill MSA. When the number of commuters for the entire MSA is considered, York County comprises 10.6% of the total MSA workers, making it the third most populous worker county in the MSA. However, when worker flow is considered in the North Carolina portion of the MSA, only 3.86% of the workers in this portion of the MSA come from York County. When examining the worker flow in the South Carolina portion of the MSA, York County comprises 86.5% of the workers. This data shows that even though York County has a high population of workers, it contributes only a small portion of the workforce to the North Carolina portion of the MSA.

Table E-4:
Where People Living in the Charlotte-Gastonia-Rock Hill MSA Work

	County of Residence							
County Worked In	Cabarrus	Gaston	Lincoln	Mecklenburg	Rowan	Union	York	Grand Total
Cabarrus (NC)	35,032	423	195	6,694	8,155	551	279	51,329
Gaston (NC)	400	56,321	3,166	3,948	232	184	2,526	66,777
Lincoln (NC)	92	1,868	15,249	748	99	7	155	18,218
Mecklenburg (NC)	22,693	23,101	6,545	329,498	4,942	24,892	23,907	435,578
Rowan (NC)	4,025	1,046	320	1,284	40,721	87	228	47,711
Union (NC)	525	226	93	4,853	181	32,613	439	38,930
York (SC)	282	1,602	99	4,217	122	608	47,898	54,828
Grand Total	63,049	84,587	25,667	351,242	54,452	58,942	75,432	713,371

Table E-5:
Where People Living in the Charlotte-Gastonia-Rock Hill MSA Work (Percentage Table)

	County of Residence							
County Worked In	Cabarrus	Gaston	Lincoln	Mecklenburg	Rowan	Union	York	Grand Total
Cabarrus (NC)	4.91%	0.06%	0.03%	0.94%	1.14%	0.08%	0.04%	7.20%
Gaston (NC)	0.06%	7.90%	0.44%	0.55%	0.03%	0.03%	0.35%	9.36%
Lincoln (NC)	0.01%	0.26%	2.14%	0.10%	0.01%	0.00%	0.02%	2.55%
Mecklenburg (NC)	3.18%	3.24%	0.92%	46.19%	0.69%	3.49%	3.35%	61.06%
Rowan (NC)	0.56%	0.15%	0.04%	0.18%	5.71%	0.01%	0.03%	6.69%
Union (NC)	0.07%	0.03%	0.01%	0.68%	0.03%	4.57%	0.06%	5.46%
York (SC)	0.04%	0.22%	0.01%	0.59%	0.02%	0.09%	6.71%	7.69%
Grand Total	8.84%	11.86%	3.60%	49.24%	7.63%	8.26%	10.57%	100.00%
Intercounty flow-NC	3.89%	3.74%	1.45%	2.46%	1.90%	3.60%	3.86%	18.03%
Intercounty flow-SC	0.04%	0.22%	0.01%	0.59%	0.02%	0.09%	0.00%	0.98%

Table E-6 presents the mobile source emissions for the Charlotte-Gastonia-Rock Hill MSA. York County accounts for only 11.53% and 10.54% of the mobile source NO_x and VOC, respectively. At 15.36 and 10.43 tons per day of NO_x and VOC, respectively, York County has approximately one-fourth the mobile source emissions of Mecklenburg County.

Table E-6: Charlotte-Gastonia-Rock Hill MSA Mobile Source Emissions				
County	NO_x tons per day	NO_x percent of MSA	VOC tons per day	VOC percent of MSA
Mecklenburg (NC)	58.23	43.72%	42.89	43.32%
Gaston (NC)	18.11	13.60%	17.63	17.81%
York (SC)	15.36	11.53%	10.43	10.54%
Rowan (NC)	14.47	10.87%	9.37	9.46%
Cabarrus (NC)	11.85	8.90%	9.05	9.14%
Union (NC)	9.71	7.29%	6.44	6.50%
Lincoln (NC)	5.46	4.10%	3.19	3.22%
Grand Total	133.20	100.00%	98.99	100.00%

Figure E-2⁷ presents the motor vehicle registration data for York County. Only a small portion of the vehicles is pre-1981 model years. In 1981, new cars were outfitted with three-way catalysts, on-board computers, and oxygen sensors to help increase the efficiency of the catalytic converters. This figure shows that the majority of cars registered are model years 1991-1995. In 1991 the EPA established lower tailpipe standards for hydrocarbons and nitrogen oxides beginning with 1994 model year vehicles.

This data reflects 2000 registration figures, and many of the older vehicles will probably have been replaced with newer vehicles. These vehicle turnovers, combined with future national low sulfur fuel standards, the use of Onboard Diagnostic (OBD) systems and Onboard Vapor Recovery (ORVR) systems, will help to offset any potential impacts from the increased emissions from mobile sources in this area.

⁷ Data provided from SC Department of Public Safety, Division of Motor Vehicles

Figure E-2: 2000 Motor Vehicle Registration Data for York County

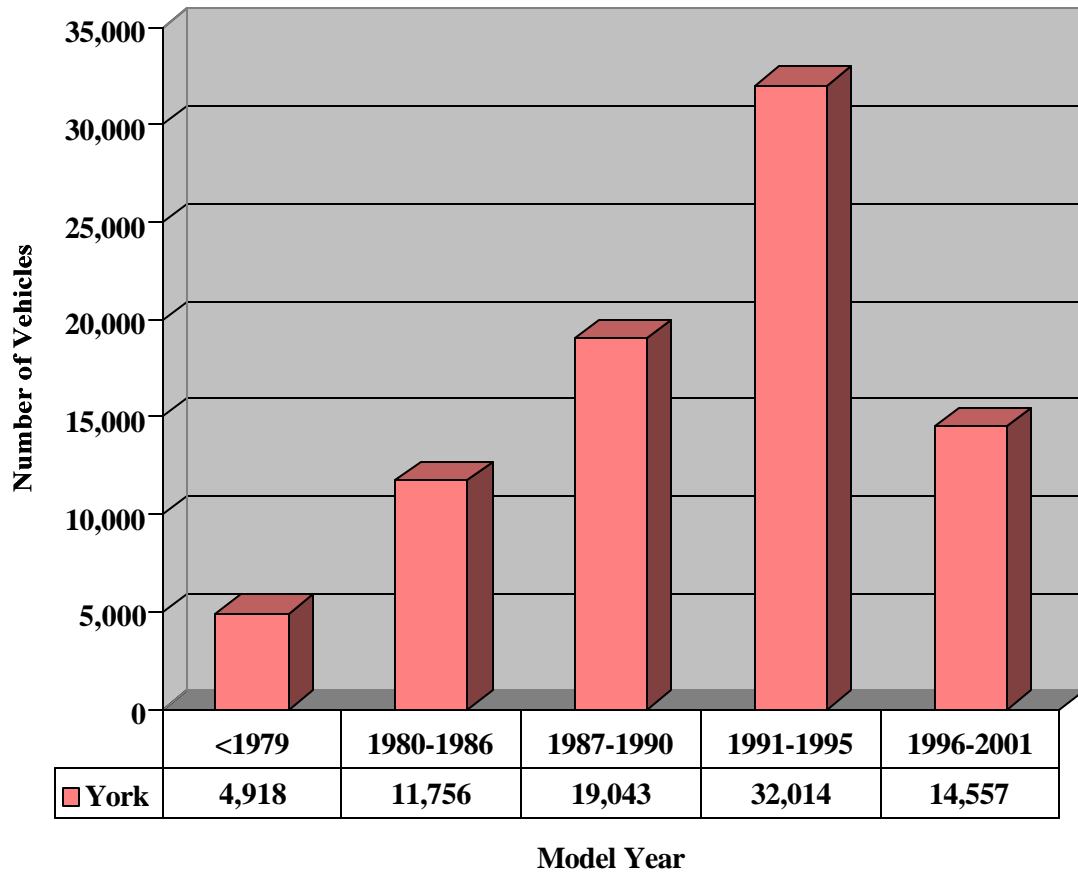
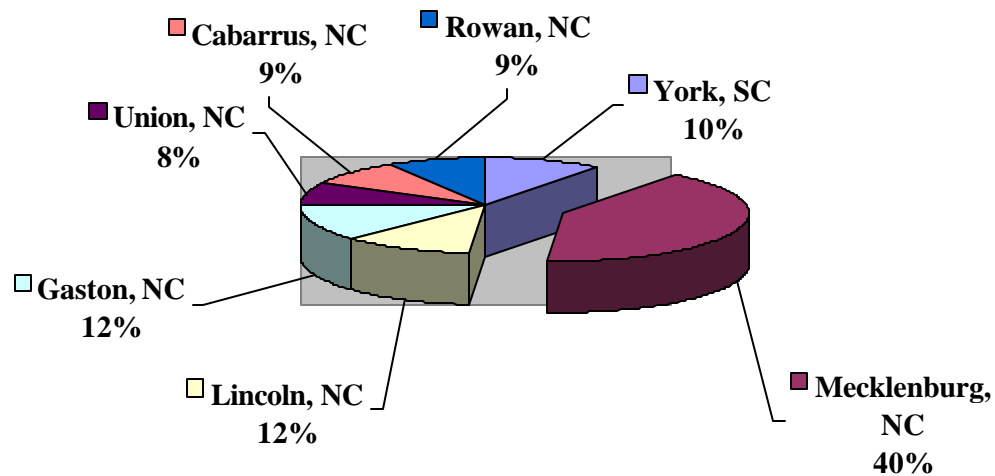


Figure E-3⁸, below presents the distribution of vehicles within the Charlotte-Gastonia-Rock Hill MSA. This chart shows that the majority of the cars are located in the North Carolina counties and only a small portion come from York County.

⁸ Data provided from US Census: 2000

**Figure E-3: Vehicles per County in the Charlotte-Gastonia-Rock Hill MSA
from US Census (1999)**



F. Expected Growth (Including Extent, Pattern, and Rate of Growth)

Limited data is available in assessing expected growth for York County and the counties surrounding it. Conclusions were drawn based on historical data from 1990, current data from 2000, and population projections for 2020 as contained in Table F-1. The data for Table F-1 was taken from the Census and the respective state's demographic websites. Economic growth, relative to population growth, is even harder to predict. No knowledge of major economic expansions is available. While it is certain that population counts will grow, it is only assumed that current economic factors will remain stable or that some economic growth will occur.

Table F-1: Historical and Projected Population and Population Density per County								
	York (SC)	Cabarrus (NC)	Gaston (NC)	Lincoln (NC)	Mecklenburg (NC)	Rowan (NC)	Union (NC)	MSA Total
Population, 1990	131,497	98,935	174,769	50,319	511,211	110,605	84,210	1,161,546
Population, 2000	164,614	131,063	190,365	63,780	695,454	130,340	123,677	1,499,293
% MSA Population, 2000	10.98%	8.74%	12.70%	4.25%	46.39%	8.69%	8.25%	100%
Projected Population, 2020	211,500	205,495	216,822	91,525	1,102,003	173,269	212,811	2,213,425
% MSA Population, 2020	9.56%	9.28%	9.80%	4.13%	49.79%	7.83%	9.61%	100%
County Growth from 2000 - 2020	28.48%	56.79%	13.90%	43.50%	58.46%	32.94%	72.07%	

In 2000, the population of York County was 164,614, which accounted for 10.98% of the total MSA population (1,499,293). The projected population for York County for the year 2020 is 211,500, or 9.56% of the total MSA projected population (2,213,425). While York County's growth from 2000 to 2020 represents a county-wide increase of 28.48%, York County's population growth relative to the MSA is a slight decrease (10.98% to 9.5%).

G. Climatology / Meteorology

The overall climatology of an area is paramount to the formation and mass movement of secondary pollutants such as ozone throughout the lowest layers of the troposphere. As a result, though the overall emission volume may remain constant across a given monitoring site, the ambient concentration of ozone at that site may change according to even the most subtle shift in the overall weather pattern. This is indeed the rule across the whole of the State of South Carolina.

The "Ozone Season" in South Carolina runs from April 1 through October 31 of each year, roughly parallel to that experienced in most areas of the Southeastern United States. The main climatological feature influencing the overall weather pattern during this period is a large ridge of stable, sinking air known as the "Bermuda High." This semi-permanent feature is normally situated just off the South Atlantic Seaboard, with its core of anticyclonic circulation centered due east of South Carolina. The average strength and position of this ridge provides a steady southwesterly flow of moist, tropical air from the Gulf of Mexico that, under normal circumstances, keeps the lower atmosphere well mixed and quite humid. These are two main factors that normally provide conditions non-conducive to the formation of elevated levels of ozone.

When the Bermuda High becomes anomalously shifted from its normal position, conditions conducive to the formation of elevated ozone may occur in many areas of South Carolina. This is mainly the case in the months during the Ozone Season immediately following an El Nino winter. During this period, which only occurs once every 4 or 5 years, the Bermuda High flattens out and builds southwestward well into the Gulf of Mexico. This shifts the moist flow out of the Gulf to the west, well away from the South Atlantic Coast. With the core of the ridge virtually parked on top of South Carolina, air stagnation can occur.

The three main underlying causes of air stagnation under this shifted Bermuda High are lack of horizontal wind flow, a stable boundary layer, and, most importantly, reduced availability of ambient moisture. In such a situation, the lower atmosphere dries out considerably, with less cloud coverage available to absorb the incoming solar radiation (UV) needed for efficient conversion of ozone from its primary component pollutants. In addition, there is much less titration and/or deposition of the pollutant back to its basal components after nightfall, when the UV source is removed. Once ozone formation perpetuates, the stable air mass traps it, pooling it closer to the ground. With little horizontal wind flow available to mix the atmosphere, the pollutant takes much longer to disperse throughout the boundary layer.

Air stagnation under an anomalous Bermuda High occurs far too sparingly to account for every elevated ozone event in South Carolina. Frequently, elevated ozone readings have been monitored when conditions were not altogether favorable for its production in that particular area. It is in these cases where transport of ozone from upwind sources comes into play.

H. Geography / Topography

The topography of South Carolina is divided into two distinct areas, commonly known as the Piedmont and the Coastal Plain. York County is located in the Piedmont Area. The line of demarcation

runs from the eastern boundary of Aiken County through central Chesterfield County to the North Carolina border. Along this line elevations begin at about 300 feet and increase in steps to over 1,000 feet in the extreme northwestern counties, culminating in isolated peaks of 2,000 to over 3,500 feet above mean sea level. East of the line, there are evidences of outcroppings from the lower Appalachians in a ridge of low hills and rather broken country between the Congaree River and the north fork of the Edisto River, and also in a rather hilly and rolling region in the upper Lynches River drainage basin between the Catawba-Wateree and the Great Pee Dee Rivers. In about one-third of the coastal plain (or what is commonly known as the upper coastal plain), the elevations decrease rather abruptly from 300 to 100 feet, thence to the coast. The major part of the coastal area is not over 60 feet above mean sea level. In this region of lower levels, to the eastward and southward, the great swamp systems of the State predominate.

The slope of the land from the mountains seaward is toward the southeast, and all of South Carolina's streams naturally follow that general direction to the Atlantic Ocean. The South Piedmont section of the State is on the eastern slope of the Appalachian Mountains with the main ridge of the mountains about 30 miles west. To some extent these mountains act as a barrier for the wind and tend to protect the area from the full force of the cold air masses during the winter months. The relatively flat areas of the Central Plains and the coastal region allow free air movement and are conducive to effective dispersion of pollutants.

I. Jurisdictional boundaries

The Department is proposing that York County be designated attainment for ozone.

J. Level of Control of Emission Sources

Through its participation with the Early Action Compact, York County is exploring not only countywide local control strategies to be implemented no later than April 2005, but also strategies that will cross county and state lines. These strategies include local option sales tax for road improvements; express bus service during peak hours to Charlotte; updating zoning regulations to address sidewalks and left-hand turn lanes in developments; prohibition on open burning during high ozone days; and a Sustainable Environment for Quality of Life (SEQL) resolution. A complete listing of the emission reduction strategies for York County was submitted to EPA in December 2003. This list will be updated in March 2004 upon submittal of the final York County Early Action Plan.

The Sustainable Environment for Quality of Life (SEQL) project calls upon government, business and community leaders from North and South Carolina to address environmental issues that impact the quality of life and economic viability of the Charlotte-metro area. SEQL invites leaders from 15 counties to work together on air quality, water quality, and sustainable growth issues. The program supports the region's efforts to develop integrated and long-term solutions to ensure economic development and a positive quality of life for its future. The project area includes fifteen counties populated by 2.1 million people and encompasses over 100 political jurisdictions. SEQL is funded by an EPA grant and led by the Centralina Council of Governments and the Catawba Regional Council of Governments.

For participation in the 8-hour ozone early action process, EPA required that North Carolina and South Carolina develop a specific memorandum of understanding (MOU) confirming the agreements reached between the two agencies with regard to ozone attainment matters, an Early Action Compact for counties in South Carolina (including York) and SEQL. This MOU, signed by the Department of Health and Environmental Control and the North Carolina Department of Environment and Natural Resources, became effective on March 14, 2003. Additionally, the Department entered into a specific memorandum of understanding with North Carolina's Department of Environment and Natural Resources confirming the agreements reached between the two agencies with regard to ozone attainment matters, an Early

Action Compact for counties in South Carolina (including York) and in the locally led Sustainable Environment and Quality of Life (SEQL) effort for the Charlotte, NC area. These efforts demonstrate a commitment by all involved to protect and improve air quality for the public. Furthermore, the MOU states that with respect to Early Action Compacts, both departments support the delivery of cleaner air sooner and agree to collectively and cooperatively seek additional support at appropriate federal, state and local levels for this proactive approach.

Emission Control Strategies

The Department is primarily responsible for ensuring attainment and maintenance of the air quality standards established by EPA. Under section 110 of the CAA and related provisions, the Department must submit, for EPA approval, State implementation plans that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved. The Department, in conjunction with EPA, also administers the prevention of significant deterioration (PSD) programs for these pollutants. In addition, Federal programs provide for nationwide reductions in emissions of these and other air pollutants under Title II of the CAA, which involves controls for automobile, truck, bus, motorcycle, off-road engine, and aircraft emissions. Since its inception in 1973, the Department has worked diligently to carry out the task of enforcing the CAA. The Department has also been delegated the authority to administer the new source performance standards under section 111 of the CAA and the national emission standards for hazardous air pollutants under section 112 of the CAA. During the past decade, the air quality in South Carolina has complied with all air quality standards, an accomplishment very few other States can claim.

If additional control measures are required to attain the air quality standard, the Department has the statutory authority to promulgate and implement regulations and to require more stringent controls on industrial and mobile sources to realize appropriate emissions reductions outside of nonattainment areas. Further, our recent actions, such as addressing NO_x emissions from stationary sources, demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

The Department proposed R.61-62.5, Standard 5.2, *Control of Oxides of Nitrogen (NO_x)* on January 8, 2004. The purpose of this regulation is to reduce or regulate the growth of ozone precursors so that the ozone monitors in the state are attaining the ozone standard in 2007. When fully implemented as proposed, this new regulation has the potential to reduce 3,000 tons of NO_x from these sources.

Early Action Plan

The health of the citizens of South Carolina is a primary concern and the Department continues to seek proactive measures to meet our commitment to public health and environmental protection. South Carolina has been in attainment of the 1-hour ozone standard for the past decade, and will make every effort to attain the new 8-hour ozone air quality standard in all areas of the State as expeditiously as possible.

EPA has provided an option for areas currently meeting the 1-hour ozone standard, like those in South Carolina, to attain the 8-hour ozone standard by December 31, 2007, and obtain cleaner air sooner than Federally mandated. This option requires an expeditious time line for achieving emissions reductions sooner than expected under the 8-hour ozone implementation rulemaking, while providing “fail-safe” provisions for the area to revert to the traditional SIP process if specific milestones are not met. Forty-five of South Carolina’s forty-six counties have entered into Early Action Compacts. This action indicates that the local governments in the State of South Carolina are very concerned with air quality. Many of the counties entering into the Early Action Compacts do not have problems meeting the air quality standard

and yet are still willing to plan and work with other areas to implement controls to ensure early attainment of the standards.

Interested stakeholders (i.e., local, State, and Federal government, citizens, public interest groups, and the business community) have been and will continue to be involved in the planning. By signing the Early Action Compact (EAC), EPA is agreeing to defer the effective date of the nonattainment designation for participating areas. However, areas that enter into an EAC but do not meet all of the terms of the EAC, including established milestones, will forfeit participation and be designated according to requirements within EPA's 8-hour ozone implementation rule. At a minimum, those requirements will include Transportation Conformity and nonattainment New Source Review.

Local areas are required to develop and implement a local early action plan that will promote the area's attainment by December 31, 2007, and maintenance of the standard until at least 2012. The local area must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. The final local plan is due to the Department in March 2004.

The Department is required to develop and implement a State early action SIP demonstrating the participating area's attainment by December 31, 2007, and maintenance until at least 2012. The Department is currently evaluating the possibility of projecting out to 2017 to evaluate the air quality ten years after the "attainment" date. The SIP is due to EPA by December 31, 2004. The State must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. Potential control strategies were identified to EPA on June 16, 2003. Final strategies are to be implemented no later than April 1, 2005. If the monitors in the nonattainment areas reflect attainment by December 31, 2007, the area will be designated as attainment and no additional requirements will be imposed (i.e., Transportation Conformity and nonattainment New Source Review).

Ozone Forecasting – Spare The Air

The South Carolina Spare the Air campaign was created by the Department's Bureau of Air Quality to educate citizens about air quality and its relationship to their health. This program provides information to the public about their air quality and warns them when levels of ozone are expected to be elevated so that they can better protect their health as well as allow them the opportunity to take actions to reduce emissions from their own activities. During the period of May 1 through September 30, the Bureau of Air Quality staff meteorologists produce daily ozone forecasts for the Upstate, Midlands, Pee Dee, and Central Savannah River area. The forecasts are provided utilizing the Air Quality Index (AQI) color scale to indicate levels of ozone in the air. Each category in the AQI is represented by a color and includes a cautionary statement for air quality conditions and the appropriate citizen response. Green represents the level being good, yellow for moderate conditions, orange for unhealthy to sensitive groups, and red for unhealthy to everyone.

South Carolina recognizes the importance of providing our citizens with information on air pollution levels where they live and work. We have implemented a comprehensive ozone-forecasting program that is not limited to a few areas but instead covers twenty-six of the forty-six counties in our state. We have partnered with North Carolina's Department of Environment and Natural Resources to provide a forecast for an additional three counties along the State border. Our citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. We have expended and continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

The forecasts are broadcast on local television and radio stations during the daily weather forecasts, distributed by email or fax to over 300 businesses, industries, organizations, and individuals, and through an agency-created website (www.scdhec.net/baq/ozone). In the high traffic areas surrounding Columbia and Greenville, warnings are also posted on Department of Transportation's message boards along the major interstates. To promote the efforts, Governor Mark Sanford declared the first week of May, 2003, "Ozone Awareness Week." The Department also hosts official "Ozone Season Kick-Off Events" around the state to annually review the warning system and ozone reduction opportunities within South Carolina.

Ozone Education and Outreach

Additionally, other elements that fall under the "Spare the Air" initiative involve education and outreach to school-aged youth and persons with chronic respiratory conditions. In cooperation with the Department's Bureau of Land and Waste Management, air quality training in the environmental curriculum titled "Action for a Cleaner Tomorrow" is provided to teachers across the state. To assist Department efforts in preventing future air pollution, the Bureau of Air Quality staff work with teachers and students through classroom resources such as prepared special lesson plans, presentations, and exhibits. Teachers are also encouraged to participate in the "Ozone Action Classroom" initiative to educate students on the dangers of ground-level ozone. Additional partners in the "Ozone Action Classroom" include the South Carolina Asthma Planning Alliance and the South Carolina Public Health Association. These groups are together, and individually, working to promote awareness of the link between ground-level ozone and air quality conditions that can trigger asthma attacks in persons with respiratory conditions.

Permitting Program

In South Carolina anyone who plans to construct, add to, or alter a source of air contaminants must first submit an application for a permit. Once a construction permit is issued (or construction approved), the applicant may then begin construction after waiting the required time period. Once construction has been completed, the applicant then requests a permit to operate. An operating permit can take several different forms based upon the quantity of the pollutant(s) to be emitted. In South Carolina permits are not only required for "major" sources (sources with emissions exceeding federal thresholds); they are also required for facilities emitting smaller quantities as well. This comprehensive permitting process allows more control over sources of emissions within South Carolina.

Title V Permitting Program

The Clean Air Act Amendments of 1990 included sweeping new revisions requiring all states to develop operating permit programs that meet certain federal criteria. The states, in turn, are to require sources to obtain permits that contain all of their Clean Air Act requirements.

On July 21, 1992, EPA issued a regulation outlining the specific minimum requirements that states must meet in their operating permits program. State and local agencies were required to submit programs to EPA by November 15, 1993, and EPA is required to approve or disapprove these programs within one year of their submittal.

EPA's operating permits regulation requires states to develop comprehensive operating permit programs that cover "major" sources of air pollution. Major sources include (1) those that emit 100 tons/year or more of volatile organic compounds, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, or particulate matter (PM-10); and (2) those that emit 10 tons/year or more of any single toxic air pollutant (specifically listed under the Clean Air Act), or those that emit 25 tons/year or more of a combination of toxic air pollutants. The primary purpose of the operating permits program is to improve

enforcement by issuing each source a permit that consolidates all of the Clean Air Act requirements into a federally enforceable document.

The State of South Carolina received full program approval of its Title V Program on June 26, 1995.

New Source Review Permitting

Congress established the New Source Review (NSR) Program as part of the 1977 Clean Air Act Amendments and modified it in the 1990 Amendments. NSR is a preconstruction permitting program that serves two purposes. First, it ensures the maintenance of air quality standards when factories, industrial boilers and power plants are modified or added. In areas with unhealthy air NSR assures that new emissions do not slow progress toward cleaner air. In areas with clean air, especially pristine areas like national parks, NSR assures that new emissions fall within air quality standards. Second, the NSR program assures that state of the art control technology is installed at new plants or at existing plants that are undergoing a major modification.

Smoke Management Program

South Carolina has a Smoke Management Program (SMP) that is certified in accordance with EPA's *Interim Air Quality Policy on Wildland and Prescribed Fires (April 23, 1998)*. The SMP involves coordination between the Department and the South Carolina Forestry Commission when addressing the impact of smoke on air quality by following guidelines that define smoke sensitive areas, amounts of vegetative debris that may be burned, and atmospheric conditions suitable for burning. The SMP can be used as a management tool for reducing ozone levels.

Government Fleets

In 1992 the U.S. Congress passed legislation to promote the use of alternative fuel vehicles (AFVs). This legislation was passed to improve air quality and reduce the nation's dependence on foreign oil. The new legislation became known as the Energy Policy Act (EPAAct). This Act requires that all Federal and State fleets, as well as private sector fuel providers such as utilities, begin purchasing AFVs by 1994. Over a period of seven years, EPAAct required a gradual phase-in of the purchase of AFVs. By 2001 EPAAct required that 75% of Federal and State fleets be composed of AFVs. To date, South Carolina is in compliance with all EPAAct requirements because of a cooperative effort within the State agencies and the operation of a unified State plan.⁹

On October 18, 2001, former Governor Hodges signed an Executive Order in strong support of the use of alternative fuels. The Order states that whenever practical and economically feasible, State agencies use alternative fuels when operating alternative fuel vehicles.

Currently, the State operates 1,370 alternative fuel vehicles. The types of alternative fuel vehicles that the State operates include the Bi-fuel Ford F-150, Flex Fuel Taurus, Dodge Caravan, and Chevrolet S-10 Pick-up. By purchasing alternative fuel vehicles, the State is making a viable effort to reduce mobile source emissions in South Carolina. An ethanol pump has been installed in the Columbia area so that the flex fuel vehicles can provide the designed benefits. The State fleet also operates hybrid vehicles such as the Honda Insight and Toyota Prius.

K. Regional/National Emission Reductions

⁹ South Carolina State Budget and Control Board, General Services Division, Office of State Fleet Management

In addition to the initiatives and regulations that have been implemented to reduce the level of VOC emissions, standards to reduce NO_x levels have also been supported on the national level. New national standards will provide tremendous air quality benefits, particularly those that will address pollution from mobile sources. Mobile source emissions contribute to air pollution in South Carolina. Strong national programs are the only way to adequately, economically, equitably, and reasonably address pollution from this source sector. The Department believes that the implementation of these regulations and reduction efforts will provide significant assistance towards statewide compliance with the air quality standards, especially in the areas where it is needed the most, our urbanized areas.

Standards For Tailpipe Emissions

Tier 2 is a tailpipe emissions rule that sets new and more stringent exhaust standards. This standard focuses on reducing emissions of ozone-forming gases (NO_x and PM) and applies to new passenger cars and light-duty trucks. The phase-in of the tailpipe emissions standards will begin in 2004 for passenger cars and light-duty trucks. This standard will be completely phased-in by 2007. The phase-in period for heavy-duty light trucks (HDLTs) and medium-duty passenger vehicles (MDPVs) begins in 2008. The standard will be completely phased-in for this group by 2009. Tier 2 standards will reduce new vehicle NO_x levels to an average of 0.07 grams/mile.¹⁰

Gasoline Sulfur Standards

The gasoline sulfur standards focus on reducing average sulfur level in gasoline to 30 ppm. Refiners and importers will be required to meet a corporate average gasoline standard of 120 ppm and a cap of 300 ppm beginning in 2004. This standard will then be reduced to 30 ppm with a cap of 80 ppm. Implementation of these standards will be the equivalent of taking 164 million cars off the road.¹⁰

Standards For Heavy-Duty Engines

The new standard for heavy-duty engines will also help to reduce mobile source emissions. This standard will become 100% effective for diesels beginning in the 2007 model year. Included in this standard is a reduction for NO_x and non-methane hydrocarbons. The reduction requires a reduction of 0.20 gram/brake horse-power-hour (g/bhp-hr). The phase-in period for this requirement will be between 2007 and 2010 for diesel engines.

Highway Diesel Fuel Sulfur Standards

On June 1, 2006, refiners will be required to start producing diesel for use in highway vehicles with a sulfur content of no more than 15 ppm. Highway diesel fuel sold as low sulfur fuel at the terminals will be required to meet the 15 ppm sulfur standard by July 15, 2006. Highway diesel fuel sold as low sulfur fuel by retail station and fleets must meet the 15 ppm sulfur standard by September 1, 2006. By mid 2006, this standard will reduce sulfur levels in diesel by 97 percent.

Non-Road Diesel Engines and Fuel

EPA recently proposed emissions reductions from off-road diesel engines and low-sulfur fuel requirements for these same engines. By 2014 emissions should be reduced by more than 90 percent and when fully phased in, NO_x emissions from this equipment would be reduced by 825,000 tons. Beginning in 2007, the sulfur content in the diesel fuel used in these off-road engines would be reduced from an

¹⁰ U.S. EPA Office of Transportation and Air Quality

uncontrolled 3,400 parts per million to 500 ppm in 2007 and then to 15 ppm in 2010. As non-road engines make up 5.21% of the NO_x inventory in South Carolina, emission reductions from this sector will be a tremendous benefit to our air quality.

NO_x SIP Call

The NO_x State Implementation Plan (SIP) Call is the common name given to a final rule that EPA published on October 27, 1998 (63 FR 57355). The rule requires South Carolina and numerous other states to reduce their summertime emissions of NO_x in order to reduce the interstate transport of ozone and its precursors.

To facilitate these reductions, the rule establishes a NO_x budget trading program in which each applicable state is given a summertime NO_x budget which they cannot exceed. The budget for each state assumes certain reductions on specific types of units. The units involved in the trading program are units that serve a generator with a nameplate capacity greater than 25 MWe, referred to as electrical generating units (EGUs); and large boilers that have a maximum design heat input greater than 250 mm Btu/hr, referred to as non-EGUs. The budget for EGUs is based upon 85 percent reductions from uncontrolled levels while the budget for the non-EGU category is based on 60 percent reductions from uncontrolled levels. The rule also calls for controls on cement kilns and large internal combustion engines, but these units are not part of the trading program.

South Carolina's NO_x budget for sources subject to the NO_x SIP Call was reduced from a baseline of 156,137 tons to 128,524 tons. This reflects a drop in overall, summertime NO_x emissions of 18 percent.

The rule allows the regulated community a great deal of flexibility. Rather than dictate the types and levels of controls, sources subject to the rule have the ability to determine where it is most cost effective to apply pollution controls. As a result, there is less certainty for states in terms of predicting where NO_x reductions may occur. So for instance, sources may choose to install pollution control equipment and sell their surplus NO_x allowance or they may choose not to install controls and simply buy the NO_x allowances they need. One significant constraint is that from May 1 to September 30 of each year, units subject to the requirements of the NO_x SIP Call must have an allowance of NO_x for every ton of NO_x that they emit.

Clean Cities

The Clean Cities program, sponsored by the U.S. Department of Energy (DOE), supports public and private partnerships that deploy alternative fuel vehicles and build supporting infrastructure. The mission of the Clean Cities program is to enhance our nation's energy security and air quality by supporting public and private partnerships that deploy clean-burning alternative fuel vehicles (AFV) and build their associated fueling infrastructure.

Goals of Clean Cities include:

1. To have one million alternative fuel vehicles (AFV) operating exclusively on alternative fuels by 2010.
2. One billion gasoline gallon equivalents per year used in AFVs by 2010.
3. Seventy-five percent of Clean Cities coalitions self-sustaining by 2005.

In 1999, the South Carolina Energy Office (SCEO) partnered with the Catawba Regional Councils of Governments and the Central Midlands Regional Council of Governments to develop two Clean Cities Coalitions in South Carolina. These partnerships came after years of SCEO work with state fleet managers, York Technical College, the Department, and other agencies.

After working as separate entities for two years, the groups merged into the Palmetto State Clean Fuels Coalition, covering a nine county region bisecting the middle section of South Carolina. The nine counties include: Fairfield, Newberry, Richland, Lexington, Aiken, Chester, Lancaster, Union and York. These counties complete the potential “clean corridor” extending from Atlanta, Georgia to Raleigh, North Carolina through South Carolina along I-20, I-26, and I-77.

The official designation of the Palmetto State Clean Fuels Coalition as a member of the U.S. Department of Energy’s National Clean Cities Program took place on January 28, 2004. (www.state.sc.us/energy/cleancities.htm).

L. Additional Technical Information

A study conducted by Texas A&M University¹¹ in 2001 looked at congestion in several cities across the United States. One of the supplements for this report was on Charlotte, NC¹². In this study, they found that PM peak conditions (defined as 4:00pm to 7:00pm) were significantly more congested and less reliable than in the morning (defined as 6:00am to 9:00am), as seen in Table L-1.

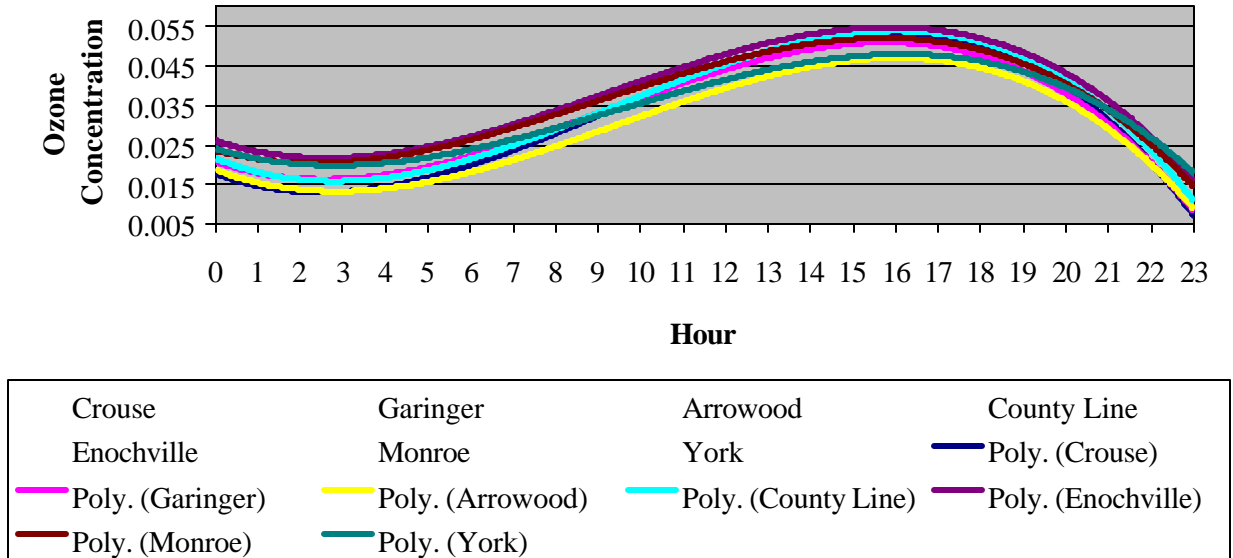
Table L-1: Peak Names and Times	
Peak Name	Time Range
Early AM	0000 – 0600
AM	0600 – 0900
Mid-day	0900 – 1600
PM	1600 – 1900
Late PM	1900 – 2400

These “peak times” became the basis for a statistical analysis of the ozone concentrations in the Charlotte-Gastonia-Rock Hill MSA. The purpose of the analysis was to see if there were any links between commuter peaks and elevated ozone concentrations. Figure L-1 presents an examination of the hourly ozone concentrations in the Charlotte-Gastonia-Rock Hill MSA and reveals that ozone typically peaks around 4:00pm which coincides with the PM peak that was referenced above.

¹¹ Monitoring Urban Roadways in 2001: Using Archived Operations Data for Reliability and Mobility Measurement. Texas Transportation Institute and Cambridge Systematics, Inc. April, 2003.

¹² www.mobility.tamu.edu/mmp/reports/monitoring_urban_roadways/appenicies/charlotte.pdf

**Figure L-1: Charlotte MSA Hourly Ozone Readings
(2001-2003 3rd Order Polynomial Regression)**



From 2001 to 2003, the number of monitors that the York monitor strongly correlates (defined as a correlational coefficient greater than or equal to 0.08) within the MSA increases as the number of hits for the year increases (see Tables L-2 through L-4). For example, in 2001, the York monitor experienced no hits, and was strongly correlated with the Garinger monitor in Charlotte. However, in 2002, the York monitor had 15 hits, and was strongly correlated with all of the other monitors in the MSA. This lends strong evidence that York County emissions do not normally affect the ozone monitors in the North Carolina portion of the Charlotte-Gastonia-Rock Hill MSA. If York County emissions were affecting Mecklenburg County monitors, then we would expect all monitors to correlate on a regular basis. However, they all correlate in 2002, suggesting that the events that transpired that year were most likely due to adverse meteorological conditions rather than significant contribution of pollutants from York County.

Table L-2: 2001 PM Peak Correlations (Pearson)						
	York (SC)	Crouse (NC)	Garinger (NC)	Arrowood (NC)	County Line (NC)	Enochville (NC)
Crouse (NC)	0.7853					
Garinger (NC)	0.8264	0.8186				
Arrowood (NC)	0.7873	0.7839	0.8855			
County Line (NC)	0.7786	0.7833	0.9363	0.8438		
Enochville (NC)	0.7775	0.8210	0.8770	0.7869	0.8864	
Monroe (NC)	0.7771	0.7428	0.8500	0.8149	0.8035	0.7929
Shaded values indicate a high level of correlation.						

Table L-3: 2002 PM Peak Correlations (Pearson)							
	York (SC)	Crouse (NC)	Garinger (NC)	Arrowood (NC)	County Line (NC)	Rockwell (NC)	Enochville (NC)
Crouse (NC)	0.8728						
Garinger (NC)	0.8839	0.8854					
Arrowood (NC)	0.8709	0.8685	0.9216				
County Line (NC)	0.8656	0.8689	0.9571	0.8855			
Rockwell (NC)	0.8550	0.8715	0.9152	0.8383	0.9337		
Enochville (NC)	0.8557	0.8925	0.9163	0.8626	0.9332	0.9245	
Monroe (NC)	0.8619	0.8311	0.9012	0.8688	0.8878	0.8656	0.8556
Shaded values indicate a high level of correlation.							

Table L-4: 2003 PM Peak Correlations (Pearson)							
	York (SC)	Crouse (NC)	Garinger (NC)	Arrowood (NC)	County Line (NC)	Rockwell (NC)	Enochville (NC)
Crouse (NC)	0.7892						
Garinger (NC)	0.7622	0.8515					
Arrowood (NC)	0.7107	0.8101	0.9016				
County Line (NC)	0.7365	0.8434	0.9350	0.8566			
Rockwell (NC)	0.7396	0.8303	0.8758	0.7968	0.9064		
Enochville (NC)	0.7257	0.8309	0.9031	0.8241	0.9101	0.9060	
Monroe (NC)	0.7737	0.7945	0.8622	0.8067	0.8390	0.8325	0.8218
Shaded values indicate a high level of correlation.							

An examination of the mean ozone concentration for 2001 to 2003 reveals that the York monitor is most highly related to the attaining Arrowood monitor during the PM peak and they both have the lowest readings in the entire MSA. This lends evidence to the fact that York County commuters have little impact on the overall mobile source emissions in the MSA due to the fact that in order to return to York

County, most of the drivers are in the vicinity of the Arrowood monitor during the PM commute.

From Tables L-5 through L-7, it is apparent that the York monitors are very similar to the Arrowood monitor. In fact, the p-values for York and Arrowood make this clear. The t-test with a significance level of 0.05 reveals p-values of 0.6544, 0.3193, and 0.6963, for 2001, 2002, and 2003, respectively. Therefore, we cannot reject the null hypothesis that states that the York and Arrowood monitors have equal mean ozone concentrations.

**Table L-5:
PM Peak Tukey (HSD) Comparison of Means (2001)**

Variable	Mean	Homogenous Groups			
Enochville (NC)	0.0504	I			
County Line (NC)	0.0496	I			
Crouse (NC)	0.0487	I	I		
Monroe (NC)	0.0482	I	I		
Garinger (NC)	0.0465	..	I	I	
York (SC)	0.0440	..	..	I	I
Arrowood (NC)	0.0436	..	..	..	I
<i>"I" indicates monitors have statistically similar means</i>					

**Table L-6:
PM Peak Tukey (HSD) Comparison of Means (2002)**

Variable	Mean	Homogenous Groups			
Rockwell (NC)	0.0521	I			
Enochville (NC)	0.0506	I	I		
County Line (NC)	0.0501	I	I		
Monroe (NC)	0.0493	I	I	I	
Crouse (NC)	0.0472	..	I	I	I
Garinger (NC)	0.0466	..	..	I	I
York (SC)	0.0450	..	..	..	I
Arrowood (NC)	0.0439	..	..	..	I
<i>"I" indicates monitors have statistically similar means</i>					

**Table L-7:
PM Peak Tukey (HSD) Comparison of Means (2003)**

Variable	Mean	Homogenous Groups			
Rockwell (NC)	0.0470	I			
Enochville (NC)	0.0422	I	I		
Crouse (NC)	0.0436	..	I		
County Line (NC)	0.0432	..	I		
Garinger (NC)	0.0398	..	..	I	
Monroe (NC)	0.0398	..	..	I	
Arrowood (NC)	0.0356	..	..	..	I
York (SC)	0.0353	..	..	..	I
<i>"I" indicates monitors have statistically similar means</i>					

